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Label Process Series LPS2011-03

Designing Marketplace Labels of Domestic Class Pest Control Products

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The purpose of this document is to provide guidance to industry and other interested parties on the development of pest control product labels for the Canadian marketplace. It recommends how to present legible text and understandable graphics on marketplace labels of Domestic Class pest control products.

1.0 Background

The principal purpose of the *Pest Control Products Act* is to protect people and the environment from the risks associated with the use of pest control products. Pest control product labels are intended to play a vital role by communicating appropriate information to the user.

Pest control product labels describe what the product is intended to control, how to use it safely, how to dispose of it, and what to do in case of emergencies. They also communicate hazard information and provide practical advice on risk mitigation such as personal protective equipment, storage conditions, buffer zones, and sensitive habitats. For this reason, labels should be designed so they are easy to read and understand.

According to subsection 23(1) of the Pest Control Products Regulations, all information that is required to be shown on a label must appear in a manner that is clearly legible and indelible. Similarly, the United States Environmental Protection Agency (USEPA) Consolidated Federal Regulations 40 CFR 156.10 (a)(1)(2) requires all label text to appear on a clear contrasting background, and not be obscured or crowded.

Additionally, information presented on pesticide labels must have sufficient prominence so as not to be overshadowed or obscured by other elements on the label. According to subsection 23(2) of the Pest Control Products Regulations, any graphic design or symbol that relates to the pest control product may be shown on the marketplace label if it does not detract from or obscure the required information.

This document presents guidance for applicants and registrants who are designing the presentation of text and graphics on pest control product labels where no guidance was provided before. It recommends ways to help ensure label text is easily legible and pictograms are understandable. It will be used by the PMRA to verify marketplace labels during marketplace label audits and when marketplace labels are specifically requested during registration renewals.

2.0 Introduction

In 2002, the Federal Provincial Territorial Committee on Pest Management and Pesticides[1] recommended that Domestic Class lawn and garden pest control product labels be improved to increase consumers' comprehension of label information. The committee also recommended that these improvements be based on the recommendations of the USEPA Consumer Labeling Initiative (CLI). Accordingly, this document applies to Domestic Class pest control products only.

The CLI research, as well as other label research done around the world, shows that charts, graphs, symbols or pictures can be used to help convey information in many cases. (USEPA *Label Review Manual*, 2003). Graphics need to be used carefully, however, to ensure they convey the message intended. Guidance for developing clear pictograms and drawings that complement text is presented in this document. The use of colour on labels and standardized graphics for primary hazard symbols will be the subject of a regulatory proposal when the Globally Harmonized System of Classification and Labelling of Chemicals is proposed for implementation in Canada.

This document is one of three guidance documents aimed at improving the readability and comprehensibility of pesticide labels. This document recommends ways to improve the readability of marketplace labels. A marketplace label is a label that matches the approved label text and has graphic designs or symbols that relate to the pest control product added to it. Another recommends ways to improve the comprehensibility of use statements. A third document presents guidance for designing clear marketplace labels for products whose dimensions present a significant challenge for applicants and registrants to display all the required text on the label.

Pesticide labels come in a variety of shapes and sizes, so not all the design recommendations presented in this document may work on all labels. Despite this, the recommendations should be considered whenever feasible while remaining consistent with applicable statutory and regulatory requirements in the *Pest Control Products Act* and Regulations. Implementing the recommendations in this document will provide industry with an opportunity to voluntarily improve the readability of their labels and demonstrate good product stewardship.

In this document, the recommendations are presented in a bulleted list as shown by the following example:

Recommendations for label elements

- Presented in bulleted format
- With minimal words

[1] Healthy Lawns Working Group Labelling Sub-committee.

2.1 United States Environmental Protection Agency Consumer Labeling Initiative

One of the main objectives of the USEPA CLI was to improve consumer understanding of household consumer product labels, specifically health and environmental information as well as information about their safe use. The CLI was a voluntary, cooperative partnership among federal, state and local government agencies, industry and other interested parties working to improve labels on a range of consumer products. The initiative included residential outdoor pesticides, indoor insecticides, and household hard surface cleaners.

Phase I of the CLI research included quantitative research, a literature review and review of extensive stakeholder comments. The recommendations from this research were used to develop a statistically representative survey of consumer attitudes, behaviour and comprehension regarding labels for use in Phase II.

Based on the detailed findings of the Phase II CLI research, it was concluded that the labels of indoor insecticides are quite effective and that incremental changes to simplify them and make them easier to read should be tested. It was also concluded that outdoor pesticide labels are more complex and less frequently followed, and therefore less familiar to consumers. For this reason, they should be simplified and arranged for easier reading.

The findings from the Phase II research formed the basis of the label language and format change recommendations that the USEPA began proposing in *Pesticide Registration Notices*, in *Federal Register Notices* and by other means in 1998. Some recommendations were incorporated directly into the USEPA *Label Review Manual, 3rd Edition* (2003).

CLI label change recommendations relevant to the design of labels in Canada include the use of:

- bulleted text rather than long narrative formats;
- more white space;
- more tables and graphics as appropriate; and
- numbered steps when a recognizable sequence of events is required.

2.2 Canadian Focus Testing

In 2007, the PMRA tested label statements from the CLI and proposed plain language variations of those statements, in focus groups across the country with participants from a broad cross-section of Canadians (Health Canada 2007a). During this testing, comments about how to improve the presentation of label information were also gathered.

Suggestions for improving label design from these audiences were similar. The general population and opinion leader groups suggested using colour, bolding and underlining to highlight key information, using point form (short sentence structure) where possible, and using a font size that is easily read. The farmer group suggested using a more concise method of communication like bullets with minimal words and sufficiently large font sizes.

2.3 Approach to Developing Recommendations

The recommendations developed for this guidance document are based primarily on four sources of information. The recommendations made in the USEPA CLI were considered along with the findings of focus testing conducted in Canada (Health Canada 2007a). The technical specifications for presenting information on hazardous products defined in the *Consumer Chemicals and Containers Regulations, 2001* (CCCR, 2001) were also considered as were the pesticide labelling requirements in *The Labeling Handbook* of the Pesticides Safety Directorate in the United Kingdom. Other supporting references are also included.

3.0 Boxes, Tables and White Space

3.1 Boxes

Phase II research of the USEPA CLI revealed that focus group participants perceived putting a box border around the text to be a positive change to current label design. Participants said a box would have a visual impact because it would draw one's eye to that area on a container. They felt that consumers would interpret boxed information as being the most important, such as Directions for Use, Precautions or First Aid. Boxes that were stacked vertically seemed to have more visual impact than side-by-side boxes.

Participants thought that boxing First Aid information was a particularly good idea because it:

- was easy to read;
- identified a problem and gave a simple answer;
- stood out from the other important information on the label;
- was boldly presented; and
- had more white space around the text.

CLI focus group participants felt that only the most important information on a product should be boxed for quick and easy reference, and that too many boxes on a label might dilute the visual impact.

3.2 Tables

USEPA CLI data showed that when lengthy and complicated information is required on a label, a tabular format may be easier to follow. The findings revealed that presenting information in tables that are at least two rows long and not more than three columns wide is preferred. The data also revealed that the typeface and size within the table should preferably be the same as on the rest of the label.

The 2003 USEPA *Label Review Manual* presents First Aid information in a tabular format to illustrate the use of tables. The manual advises registrants to make sure that tables include all the appropriate information, be easy to follow, and have different types of information clearly divided or discernable.

3.3 White Space

According to Singer et al. 2003, white space is the blank area around and between the other elements on a page and it is used:

- around a page to frame the information;
- between sentences to separate one from another;
- between paragraphs to distinguish one idea from the next;
- around headings and important information to emphasize importance; and
- around graphics to increase their clarity.

Generous use of white space to separate the different elements on a label can increase the readability of text.

Recommendations for Boxes, Tables and White Space

- Text boxes and tables should be used to attract the user to the most important sections of the label such as FIRST AID instructions, PRECAUTIONS or the DIRECTIONS FOR USE.
- Text boxes should be stacked vertically on label display panels.
- Boxed and tabled information should have the same typeface and size as the rest of the label.
- Tabled information should be clearly divided and ideally have no more than three columns.
- White space should be used as liberally as possible on any size of label and between lines of text to ensure letters do not touch.

4.0 Modified Paragraphs

Modified paragraphs present text in a series of full sentences with subheadings, numbering, etc. to make it easier to find information. The 2003 USEPA *Label Review Manual* states that if a paragraph format must be used, registrants should try to help the reader by including either subheadings, or highlighting key words or phrases, etc.

An example of how a modified paragraph is used in the Directions for Use is as follows:

> FLEAS: Spray infested areas such as a pet's bed and resting quarters. BEDBUGS: Take beds apart. Spray frames, joints, mattresses, particularly tufts and seams, floorboards, mouldings and baseboards. FOR OUTDOOR USE ON FLOWERS AND SHRUBS: Spray with slow, sweeping motion, keeping 30 to 45 cm away from all plants.

Recommendations for Modified Paragraphs

- Subheadings should be used to clearly organize long paragraphs.
- Words and phrases should be emphasized to help the reader locate key information.

5.0 Bulleted Text and Numbered Steps

5.1 Bulleted Text

Participants in the CLI preferred precautionary statements be presented in bullet format, each limited to one line of text. The CLI data showed that information presented in a "bulleted" format (one-line statements) is easier to read than narrative formats (paragraphs) that continue onto more than one line or wrap from the bottom of the left-hand column to the top of the right-hand column. When using the bullet approach, the intent is not to leave information out, but to make it visually easier to follow.

Canadian focus testing (Health Canada 2007a) revealed that the general public and opinion leaders feel that labels should, where possible, use point form with short sentence structure. Similarly, farmers who participated in the focus testing indicated that a more concise method of communication, like bullets with minimal words, would improve labels.

Recommendations for Bulleted Text

- Point form (bullet format) with minimal words should be used.
- All bullets for precautionary statements should be in the same column.
- As far as possible, only one bullet should appear on each line.
- Only round or square full-filled bullet shapes should be used.
- Bullets should be the same colour as the typeface used on the line.
- Bullets used in boxes or tables should be of the same style as those on the rest of the label.

5.2 Numbered Steps

The USEPA CLI recommended that directions be numbered in sequence where appropriate, providing the proper order of steps to take when using a product. This makes it easier for users to find their place again if temporarily interrupted while reading the Directions for Use. Keeping all text for a step on one line, instead of continuing and wrapping around onto multiple lines, also makes it easier for the reader to follow.

Canadian farmers who participated in focus testing felt that prime space on labels should be dedicated to information for them about the product, such as the sequence of steps to follow when mixing.

Recommendations for Numbered Steps

- As far as possible, all text for each numbered step should be kept to one line.
- Instructions should be numbered if the sequence of steps is important, especially in the DIRECTIONS FOR USE section.

6.0 Font

The words “typeface” and “font” are often used interchangeably, but a font, technically is a typeface of a particular size. The most frequent suggestion for all categories of labels tested under the CLI was to use larger type that is easier to read (CLI Phase II). Similarly, focus groups tested in Canada (Health Canada 2007a) expressed a desire to have a larger font size that is easily read.

The Healthy Lawns Labelling Sub-committee recommended developing guidance on using font styles and sizes that defines a minimum font size for all label text, and a larger than minimum font size for certain highly important information such as emergency numbers.

6.1 Typeface

Not all typefaces are equally legible, so only those that have easily distinguished letters should be used on product labels (Singer et al. 2003). Differences in typeface design are why one typeface may look smaller or larger than another.

Serif typefaces, like Times New Roman, have extra lines at the tip and base of each letter whereas sans serif typefaces lack these extra lines. Serif typefaces are used for most of the text in books and magazines (Singer et al. 2003). For short messages or signal words, wherein legibility is of primary concern, text characters should be sans serif (Lehto 1992).

The technical specifications for the presentation of information in section 19 (1) of the CCCR, 2001, states that information set out in words must be printed in standard sans serif type that is not compressed, expanded or decorative. Examples of sans serif typefaces include Arial, Helvetica, Futura, Letter Gothic, and Univers.

In the United Kingdom, the Pesticides Safety Directorate *Labelling Handbook* (2002, amended 2004) recommends a Roman typeface (plain upright typeface, devoid of oddities used in ordinary print) be used for all body of text and that Gill sans and Helvetica are examples of typefaces with clarity when set in 6 point (Pesticides Safety Directorate 2002 [amended 2004]).

6.2 Size

The size of the typeface, or font, is measured in points, where 1 point equals 1/72 of an inch or approximately 0.35 millimetres. The point size of a typeface is the approximate distance from the top of an upper-case letter to the bottom of a lower-case letter with a descender (for example, the bottom of a "j") (Singer et al. 2003). The literature review conducted during Phase I of the USEPA CLI revealed that large print size generally improves readability. See Appendix I for a comparison of typeface sizes in Arial (sans serif) and Times New Roman (serif) typeface.

The CCCR, 2001 further specifies in section 19 (1) that the standard sans serif type must have a large body size or "x-height" relative to the ascender or descender of the type. This is illustrated in Schedule 4 of the CCCR, 2001 as follows:

ILLUSTRATION — STANDARD SANS SERIF TYPE

In the USEPA *Label Review Manual, 3rd Edition* (2003) it is specified that no type on any label can be less than 6 point. This requirement is aligned with the American National Standards Institute's Standard Z535.4-1991 for product safety signs and labels that stipulates a lower case height of 6 point should be the minimum height for safety messages. The *Label Review Manual* also provides a template with which registrants can determine the appropriate type size based on the size of the label. A type size of 6 point is the recommended minimum on labels 5 square inches (12.5 square centimetres) and smaller.

In the United Kingdom, the Pesticides Safety Directorate *Labelling Handbook* (2002, amended 2004) recommends that pesticide labels use the largest possible typeface in relation to the label size. They further recommend that the minimum type size be 6 point (with 1 point bold), and that this type size only be used if the pack size precludes any larger point size.

Canadian focus group testing (Health Canada 2007a) revealed that participants from the general public feel that certain critical or vital instructions (for example, the emergency telephone number) should appear in a larger font than is used in the text of the label, to ensure that the consumer does not overlook this information.

Recommendations for Typeface and Size

- Standard sans serif (Arial, Helvetica, etc.) typeface that is not compressed, expanded or decorative should be used.
- The typeface should have a large body size, or “x-height” relative to the ascender or descender of the type.
- The largest possible typeface in relation to the label size should be used for the body of the text.
- A typeface with a minimum 6 point body size and 2 mm height should be used for the body of the text.
- The emergency number should appear in a larger typeface size than the minimum.

Registrants should continue to consult with the PMRA about special labelling requirements for small product labels on a case-by-case basis.

6.3 Headings

Section 26 (2) of the Pest Control Product Regulations specify which headings (for example, PRECAUTIONS, FIRST AID) must appear in upper case on pest control product labels in Canada. The effects of differentiating signal word letter height from the message text letter height was investigated by Braun et al. in 1992. They found that a 2 point size difference between the typeface of the signal word and the typeface in the main body of the warning produces a greater likelihood of reading a warning over a 4 point size difference between typefaces. See Appendix II for a comparison of title and text sizes in Arial and Times New Roman typeface.

Bolding, underline and different colours can also be used effectively to highlight subject headings. Section 7.0 on Colour Contrast, in this document, presents further details on the use of colour for headings and text.

6.4 Upper and Lower

Message text may be more easily read when both upper and lower case letters are used (United States Consumer Product Safety Commission 1995). Text with all upper-case letters may be appropriate for headings, warnings, or short sentences that deserve special attention. However, the use of lowercase letters and initial upper-case letters (sentence capitalization) makes sentences and long passages of text easier to read (Singer, J.P. et al. 2003).

For example:

This sentence is written using sentence capitalization, so it includes both upper case and lowercase letters.

THIS SENTENCE IS WRITTEN USING ALL UPPER CASE LETTERS. IT IS MORE DIFFICULT TO READ AND CAN BE CONFUSING BECAUSE THERE IS LESS VARIATION AMONG THE LETTER SHAPES.

Recommendations for Headings and Upper and Lower Case

- There should be a marked difference between the typeface used for section headings and the typeface used in the body of the text, for example, a 2-point (0.7 mm) size difference, bolding, colour contrast or underline.
- Label text should use both upper and lower case letters.

7.0 Colour Contrast

Contrast has a major effect on the legibility of label text. The CCCR, 2001 for hazardous consumer products states that "the colour contrast between the information and the background must be equivalent to at least a 70% screen of black on white." See Appendix III for a comparison of black text on different colour backgrounds.

Although it is general practice to use dark print on a lighter background for text passages, highly contrasted light print on a dark background is also acceptable, especially where text is limited (Singer et al. 2003). Guidelines emphasize that colour and high contrast are important for effective warnings and that colour should not be over-used (Wolgalter et al. 2002). See Appendix IV for a comparison of constant background with different colour print.

In the United Kingdom, the colours of product label background and text are at the discretion of the applicant or registrant (Pesticides Safety Directorate *Labelling Handbook* 2002, amended 2004). Applicants for pest control product registrations must ensure there is adequate colour contrast between the print and the background. The *Labelling Handbook* further advises against the use of colour combinations that would make the text difficult to read (for example, red on black).

Canadian focus testing (Health Canada 2007a) also revealed that participants from the general public prefer the use of colour, bolding and underlining to highlight key information. This supports the finding of the qualitative research in Phase II of the USEPA CLI where focus group participants suggested that a caution hierarchy in colour be part of a standardized label format. However, CLI Phase II recommendations call for additional research on the use of colour for highlighting.

Recommendations for Colour Contrast between Printed Text and Background

- There should be colour contrast of at least 70% between black text on different colour backgrounds.
- As far as possible, there should be colour contrast of at least 90% between white or different colour print on constant background for section headings.

8.0 Pictograms and Drawings

Pictograms and drawings are graphic designs that can provide users with information that text alone cannot supply as effectively. When information is presented graphically rather than textually, there is a better chance of it being understood by a wide range of users. Graphics, however, cannot always substitute for text, and tend to be most effective and best understood when accompanied by text (Singer et al. 2003).

Although photographs may be more realistic than illustrations, photographs may show irrelevant information and details that line drawings can leave out (Singer et al. 2003). Overall, the literature suggests that for graphics that are both understandable and immediately legible, the image content should be concrete, not more complex than needed, and not dependent upon minor pictorial details for meaning (Collins and Lerner 1983).

Pictograms and line drawings should be accurate to minimize the need for interpretation. In the United Kingdom, the Pesticides Safety Directorate *Labelling Handbook* (2002, amended 2004) describes what is acceptable and what is not in terms of artwork on labels. According to their system, graphics on pesticides are acceptable if they:

- do not obscure or crowd required label text,
- do not misrepresent the product, and
- are not used instead of required text.

Section 23 (2) of the Pest Control Products Regulations specify that any graphic or symbol that relates to the pest control product may be shown on the marketplace label if it does not detract from or obscure the required information.

8.1 Pictograms

Pictograms, or pictographs, are pictorial representations and illustrations that appear on the pesticide labels. If being used to show a sequence of events, they can illustrate the effect of previous actions in the next graphic. Commonly used and standardized symbols, pictograms, and pictorials such as the circle-and-slash, which is used as a symbol for prohibition, are usually safe even though an “X” may convey this better to certain audiences (Singer et al. 2003).

Precautionary pictograms (symbols) and their associated signal words that indicate the nature and degree of the primary hazard inherent in pest control products will be the subject of a regulatory proposal when the Globally Harmonized System of Classification and Labelling of Chemicals is introduced in Canada. Descriptive text often accompanies pictograms and is used to complement the graphic by describing an event or how an action is performed.

8.2 Drawings

Drawings or illustrations are often used on pesticide labels to help identify where text is located, for example, an arrow will indicate where to peel back the label. Although drawings are cost-effective and versatile, they often require interpretation if done poorly (Singer et al. 2003). The most useful drawings are accurate and minimize the need for interpretation.

Line drawings can be manipulated to show normally hidden or hard to see parts (for example, cutaway views or cross-sectional views). It is important to show the consumer's point of view in all drawings. Line drawings or illustrations can be designed to show exactly what consumers should do, to minimize clutter and confusion, and to draw consumers' attention to important information. If multiple graphics are used to show a sequence of events, the consumer should see the effect of their previous action in the next graphic (Singer et al. 2003).
Section 23 (2) of the Pest Control Product Regulations requires that any graphic design or symbol shown on the marketplace label of a pest control product in Canada not detract from or obscure the required information. This document presents guidance for developing clear pictograms and drawings that complement text.

Recommendations for Pictograms and Drawings

Pictograms and line drawings should:

- attract the user;
- reliably convey the intended message;
- be used in preference to photographs to show the desired object or pest species;
- be accompanied by a descriptive text underneath it or at least on the same line or level; and
- show the effect of previous actions in the next graphic, if being used to show a sequence of events.

Pictograms and line drawings should not:

- crowd the label;
- replace required text;
- require the reader to infer a meaning; or
- be misleading or unrelated to the intended use of the product.

9.0 Standardized Layout

Many participants in the CLI thought a standardized label format (such as each product having the same kind of layout, putting specific sections in the same place on all labels, using the same typeface) would encourage consumers to read labels more often or to read more of the label. They also thought standardization might help consumers find information on labels more easily and quickly.

Canadian focus testing did not reveal a consensus among participants for a standardized layout of information on pesticide labels (Health Canada 2007a). Only focus group participants involved in agriculture felt there was a need for more standardization between labels. A standardized layout for buffer zone instructions will be described in a PMRA Science Policy Notice on agricultural buffer zones.

10.0 Limitations

Improving pest control product labels doesn't necessarily result in increased compliance with label directions. The effectiveness of labels in eliciting compliant behaviour has been described as occurring in five stages (Conzola and Wogalter 2001). The first two stages involve getting the attention of the reader and making the information understandable, while consumers' attitudes and beliefs, motivation, and behaviour determine whether they comply with the instructions. This document, and the *Guidance to Improve Statements on Labels of Domestic Class Pest Control Products*, only deal with the first two stages of eliciting compliant behaviour, namely getting the reader's attention and making the information understandable. To further minimize the risk associated with pesticide use, the Agency will continue to educate the public and raise awareness about the importance of following directions on labels of pest control products. In addition, when the PMRA is alerted to unacceptable risks associated with pesticide use, or if any violation of the *Pest Control Products Act* and Regulations is known or strongly suspected, the PMRA will investigate.

11.0 Summary of Recommendations

Boxes, Tables and White Space

- Text boxes and tables should be used to attract the user to the most important sections of the label such as FIRST AID instructions, PRECAUTIONS or the DIRECTIONS FOR USE.
- Text boxes should be stacked vertically on label display panels.
- Boxed and tabled information should have the same typeface and size as the rest of the label.
- Tabled information should be clearly divided and ideally have no more than three columns.
- White space should be used as liberally as possible on any size of label and between lines of text to ensure letters do not touch.

Modified Paragraphs

- Subheadings should be used to clearly organize long paragraphs.
- Words and phrases should be emphasized to help the reader locate key information.

Bulleted Text

- Point form (bullet format) with minimal words should be used.
- All bullets for precautionary statements should be in the same column.
- As far as possible, only one bullet should appear on each line.
- Only round or square full-filled bullet shapes should be used.
- Bullets should be the same colour as the typeface used on the line.
- Bullets used in boxes or tables should be of the same style as those on the rest of the label.

Numbered Steps

- As far as possible, all text for numbered steps should be kept to one line.
- Instructions should be numbered if the sequence of steps is important, especially in the DIRECTIONS FOR USE section.

Typeface and Size

- Standard sans serif (Arial, Helvetica, etc.) typeface that is not compressed, expanded or decorative should be used.
- Typeface should have a large body size, or “x-height” relative to the ascender or descender of the type.
- The largest possible typeface in relation to the label size should be used for the body of the text.
- A type with a minimum 6-point body size and 2 mm height should be used for the body of the text.
- The emergency number should appear in a larger typeface size than the minimum.

Headings and Upper and Lower case

- There should be a marked difference between the typeface used for section headings and the typeface used in the body of the text, for example, a 2-point (0.7 mm) size difference, bolding, colour contrast or underline.
- Label text should use both upper and lower case letters.

Colour Contrast between Printed Text and the Background

- There should be colour contrast of at least 70% between black text on different colour backgrounds.
- As far as possible, there should be colour contrast of at least 90% between white or different colour print on constant background for section headings.

Pictograms and Drawings

Pictograms and line drawings should:

- attract the user;
- reliably convey the intended message;
- be used in preference to photographs to show the desired object or pest species;
- be accompanied by a descriptive text underneath it or at least on the same line or level; and
- show the effect of previous actions in the next graphic, if being used to show a sequence of events.

Pictograms and line drawings should not:

- crowd the label;
- replace required text;
- require the reader to infer a meaning; or
- be misleading or unrelated to the intended use of the product.

12.0 Implementation

The implementation of this guidance for designing marketplace labels is voluntary. Changes are to be made to marketplace labels and not to text labels submitted for registration or amendment. Under the current electronic label approval process in Canada, the text on proposed pest control product labels is verified electronically. This process does not allow for verification of the final printed marketplace label.

The PMRA will follow this guidance when it conducts periodic marketplace label audits and "spot checks" in the marketplace. Additionally, the PMRA reserves the right to verify marketplace labels at any time. Registrants' marketplace labels are also subject to verification during the registration renewal process if the PMRA specifically requests they be submitted.

List of Abbreviations

CCCR	*Consumer Chemicals and Containers Regulations*
CLI	*Consumer Labeling Initiative* (United States)
PMRA	Pest Management Regulatory Agency
USEPA	United States Environmental Protection Agency

Appendix I Comparison of Typeface Sizes in Arial and Times New Roman

Font Size	Arial (Sans Serif Typeface)	Times New Roman (Serif Typeface)
Title 6 Body 6	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.
Title 8 Body 6	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Repeat as needed. Use with caution on young plants and new growth. Spray in early morning or in the evening.
Title 9 Body 7	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.
Title 10 Body 8	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.
Title 11 Body 9	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.
Title 12 Body 10	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.

Appendix II Comparison of Title and Text Typeface Sizes in Arial and Times New Roman

Font Size	Arial	Times New Roman
Title 8 Body 8	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.
Title 9 Body 8	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.
Title 10 Body 8	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.	**DIRECTIONS FOR USE** Turn adjustable nozzle back slightly and squeeze trigger to operate. Adjust nozzle to provide desired spray pattern. Spray to provide thorough coverage of both upper and lower leaf surfaces. Insects must be contacted by spray to be killed. Use with caution on young plants and new growth. Spray in early morning or in the evening.
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Appendix III Constant Black Text on Different Colour Backgrounds

Black Text (100% contrast)

Black Text (90 % contrast)

Black Text (80% contrast)

Black Text (70% contrast)

60% contrast:

Black Text (60% contrast)

50% contrast:

Black Text (50% contrast)

40% contrast:

Black Text (40% contrast)

30% contrast:

Black Text (30% contrast)

20% contrast:

Black Text (20% contrast)

10% contrast:

Black Text (10% contrast)

0% box contrast:

Black Text (0% box shading)

Appendix IV Constant Background with Different Colour Print

100% contrast

90% contrast

80% contrast

70% contrast

60% contrast:

60% contrast

50% contrast:

50% contrast

40% contrast:

40% contrast

30% contrast:

30% contrast

20% contrast:

20% contrast

10% contrast:

10% contrast

0% contrast:

0% contrast

References

American National Standards Institute 1991. *American national standard on product safety signs and labels: Z535.4*, Washington, DC: National Electrical Manufacturers Association.

Assessment of Proposed Requirements for Precautionary Labelling Elements 1994. Optima Consultants for the Product Safety Bureau, Health Canada 1994:82.

Braun, C.C., C. Silver, and B.R. Stock 1992. *Likelihood of reading warnings: The effect of fonts and font sizes*. Proceedings of the Human Factors Society 36th Annual Meeting, 926-930. Santa Monica, CA: The Human Factors Society.

Braun, C.C and N.C. Silver 1995. *Interaction of signal word and colour on warning labels: differences in perceived hazard and behavioral compliance*. Ergonomics: **38**: 2207–2220.

Canadian Public Health Association 2002. *Good Medicine for Seniors: Guidelines for Plain Language and Good Design in Prescription Medication* 15 pp.

Collins, B.L. and N.D. Lerner 1983. *An evaluation of exit symbol visibility* NBSIR 82-2485. Washington, D.C.: National Bureau of Standards.

Commissioner of the Environment and Sustainable Development 2003. *Managing the Safety and Accessibility of Pesticides*.

Consumer Chemicals and Containers Regulations, *Hazardous Products Act* 2001 (SOR/2001-269), Department of Justice Canada.

Conzola, V.C. and M.S. Wolgalter 2001. *A communications — human information processing (C-HIP) approach to warning effectiveness in the workplace*. Journal of Risk Research **4**:309–322.

Food and Drug Regulations (C.R.C. c. 870), *Food and Drugs Act* 1985. Department of Justice Canada.

Health and Safety Executive, United Kingdom 2002. *The Idiot's Guide to CHIP*.

Health Canada 2007a. *Focus Testing of Pesticide Messages and Labels* (HC POR 06-99).

Health Canada 2007b. *Investigating Canadian Attitudes and Behaviours Surrounding Chemicals in Consumer Products*, Health Canada, March 2007.

Hellier E., J. Edworthy, N. Derbyshire, and A. Costello 2006. *Considering the impact of medicine label safety design characteristics on patient safety*. Ergonomics **49**: 617–630.

Lehto, M.R. 1992. *Designing warning signs and warning labels: Part I – Guidelines for the practitioner*, International Journal of Industrial Ergonomics **10**: 109.

Luximon A, L.W. Chung, and R.S. Gooetilleke 1998. *Safety signal words and colour codes: the perception of implied hazard by Chinese people*. Proceedings of the 5th Pan-Pacific Conference on Occupational Ergonomics, 30–33.

Pest Control Product Regulations (SOR/2006-124), *Pest Control Products Act* 2002, Department of Justice Canada.

Sattler, B., B. Lippy, and T.G. Jordan 1997. *Hazard Communication: A Review of the Science Underpinning the Art of Communication for Health and Safety*.

Singer, J.P., G.M. Balliro, and N.D. Lerner 2003. *Manufacturer's Guide to Developing Consumer Product Instructions* Contract No.: CPSC-S-02-1215 U.S. Consumer Product Safety Commission.

United Kingdom, Pesticides Safety Directorate, 2002 (amended 2004). *The Labelling Handbook*.

United States Consumer Product Safety Commission 1995. *Product Labeling Guide Literature Review* by B.M. Kotwal and N.D.Lerner, COMSIS Corporation Contract CPSC-C-93-1132.

United States Environmental Protection Agency 1996. *Consumer Labeling Initiative Phase I Report*.

United States Environmental Protection Agency 1996. *Consumer Labeling Initiative Phase II Report*.

United States Environmental Protection Agency, *Label Review Manual* 3rd Edition, Office of Prevention, Pesticides & Toxic Substances. EPA735-B-03-001, August 2003.

United States Environmental Protection Agency 2007. Electronic Code of Federal Regulations *Title 40: Protection of the Environment, Part 156 Labeling Requirements for Pesticides and Devices*.

Wolgater, M.S., A.B. Magurno, A.W Carter, J.A. Swindell, W.J. Vigilante, and J.G. Daurity 1995. *Hazard associations of warning header components.* Proceedings of the Human Factors and Ergonomics Society 39th Annual Meeting, 979–983.

Wogalter, M., V. Conzola, and T.L. Smith-Jackson 2002. *Research-based guidelines for warning design and evaluation*. Applied Ergonomics **33**: 219–230.