Health Canada Santé Canada

August 29, 2007

NOTICE

Our file number: 07-119627-108

Release of Final Health Canada Document: "Guidance Document: Disinfectant Drugs"

The above referenced document outlines the policy and guidance for industry and staff regarding the regulation of disinfectant products pursuant to the *Food and Drugs Act*. It has been updated to reflect the September 12, 2001 amendment of the *Pest Control Products Regulations*, which consolidated the regulation of disinfectants under the purview of the *Food and Drugs Act*, and resulted in a single window at the Therapeutic Products Directorate for the evaluation and authorization of hard surface disinfectants in Canada. The document has been modified in format and in content from the 1999 edition of the Disinfectant Drug Guidelines, particularly in the following areas:

- separate safety and efficacy testing guidelines for 1) hard surface disinfectants, 2) disinfectant-sanitizers, and 3) food contact sanitizers;

- warnings and first aid information,

- a shift based on current science, of the particular focus on additional labelling requirements, from HIV-1 to bloodborne pathogens including HIV-1, hepatitis B and C viruses.

While superseding the 1999 edition of the Disinfectant Drug Guidelines, this document replaces the draft guidance of the same title, which was released by Health Canada on September 22, 2006, and posted on the Website for information, consultation and comment. As well, the three Category IV Monographs on disinfectants which were posted previously on the Nonprescription Drugs web page, are now superseded by Section 5.7.5 of this final guidance document. Nonetheless, during a period of 60 days following this posting date, applications for a drug identification number (DIN) which are based on the 1999 Guidelines, will be processed and reviewed according to the very same 1999 document. Comments and suggestions received from the Fall 2006 public consultation were reviewed and considered in the finalization of the present document. A tabulation summarizing the comments received and the outcome of the Health Canada discussion of these comments is available upon request.

Should you have any further questions or comments regarding the content of this guidance, please contact :

Bureau of Gastroenterology, Infection and Viral Diseases
Therapeutic Products Directorate
Finance Building A.L. 0202D1
101 Tunney's Pasture Driveway
Ottawa, Ontario K1A 0K9

Fax: (613) 941-1183
E-Mail: BGIVD_Enquiries@hc-sc.gc.ca

Health Canada Santé Canada

GUIDANCE DOCUMENT

Disinfectant Drugs

Published by authority of the
Minister of Health

Date Adopted	1999/04/20
Revised Date	2007/08/15
Effective Date	2007/10/29

Health Products and Food Branch

Canada

Our mission is to help the people of Canada maintain and improve their health. *Health Canada*	HPFB's Mandate is to take an integrated approach to managing the health-related risks and benefits of health products and food by: • minimizing health risk factors to Canadians while maximizing the safety provided by the regulatory system for health products and food; and, • promoting conditions that enable Canadians to make healthy choices and providing information so that they can make informed decisions about their health. *Health Products and Food Branch*

Également disponible en français sous le titre: Désinfectants assimilés aux drogues

FOREWORD

Guidance documents are meant to provide assistance to industry and health care professionals on **how** to comply with governing statutes and regulations. Guidance documents also provide assistance to staff on how Health Canada mandates and objectives should be implemented in a manner that is fair, consistent and effective.

Guidance documents are administrative instruments not having force of law and, as such, allow for flexibility in approach. Alternate approaches to the principles and practices described in this document ***may be*** acceptable provided they are supported by adequate justification. Alternate approaches should be discussed in advance with the relevant program area to avoid the possible finding that applicable statutory or regulatory requirements have not been met.

As a corollary to the above, it is equally important to note that Health Canada reserves the right to request information or material, or define conditions not specifically described in this document, in order to allow the Department to adequately assess the safety, efficacy or quality of a therapeutic product. Health Canada is committed to ensuring that such requests are justifiable and that decisions are clearly documented.

This document should be read in conjunction with the accompanying notice and the relevant sections of other applicable guidance documents.

TABLE OF CONTENTS

1 POLICY OBJECTIVES

- To outline the policy interpretation of the definition, classification, purpose and assessment/review of drugs in the *Food and Drugs Act and Regulations*, as applicable to disinfectants, and

- To provide guidance to manufacturers/sponsors regarding the preparation and submission of information necessary for the pre-market assessment and approval of these disinfectant products in Canada.

2 POLICY STATEMENTS

Health Canada (HC) recognizes that any change to a disinfectant may impact the safety, efficacy and quality of that disinfectant. HC also recognizes that any change to the information associated with a disinfectant, e.g., labelling, may impact the safe and effective use of that disinfectant.

To enable HC to administer and evaluate the applications for drug identification numbers (DIN), it is recommended that the principles enunciated in subsections 2.1 and 2.2 be followed.

2.1 Efficacy Requirements

When designing test protocols, it is recommended that as a minimum, applicants consider the Canadian General Standards Board (CGSB) guideline CAN/CGSB-2.161-97, entitled "Assessment of Efficacy of Antimicrobial Agents for Use on Environmental Surfaces and Medical Devices".[1] In applying this guidance, HC will also take evolving science in consideration, as well as internationally accepted test standards. For example, as a result of the development of new protocols such as the Standard Quantitative Carrier Test Methods ASTM E2111-00 and ASTM E2197-02,[18] HC will also accept for review, data which are based on alternative methodologies to those listed in CAN/CGSB-2.161-97. In this context, the regulatory decision will be based on the scientific validity of the study conducted. This includes internationally recognized methodologies that are revised or adapted to allow for the use of surrogate organisms, e.g., feline calicivirus for Norwalk or Norwalk-like viruses and the bovine viral diarrhea virus for Hepatitis C. The Duck Hepatitis B virus (DHBV) will be considered an acceptable surrogate for the human virus (HBV) on the basis of full validation, i.e., only if the supporting efficacy data are shown reproducible and reliable, and have been reproduced and repeated indeed, in at least two independent laboratories. It is recommended to discuss with HC any alternate methodology prior to its use towards a DIN application.

2.2 Applications

A number of application processes have been developed to provide abbreviated reviews for certain groups of disinfectant products and to respond to common types of application requests. It is important to note that all disinfectant DIN applications are handled in accordance with HC's *Guidance for Industry: Management of Drug Submissions (MDSG)*, which includes target performance standards for submission reviews.

2.2.1 Abbreviated Reviews

If a disinfectant product and its labelling comply with all the criteria in an existing Category IV Monograph, Labelling Standard or Labelling Guide, then the product will qualify for an abbreviated review, under the target performance standard indicated in Appendix 3 of the *MDSG*. Efficacy data will not be required to be submitted with the application. These criteria are described in more details in section 5.7.5. Efficacy claims, indications and labelling that fall outside of such criteria require support with appropriate data from the manufacturer/sponsor, and any further assessment of such information by the Therapeutic Products Directorate (TPD) will therefore disqualify a DIN application from having the privilege of an abbreviated review.

2.2.2 Full Reviews

If a disinfectant product and its labelling do not meet all the criteria in an existing Category IV Monograph, Labelling Standard or Labelling Guide, then a full review will be required, under the target performance standard indicated in Appendix 3 of the *MDSG*. The time allocated for a full review is of course in addition to a screening period. Appropriate efficacy data should be provided with the submission to support the labelling claims, as indicated in Table 5-2.

2.2.3 Application for New Drugs

If a disinfectant product is associated with an active ingredient or an indication that has not been marketed in Canada, then its premarket evaluation by HC will be subject to the requirements for a New Drug Submission (NDS), under the target performance standard indicated in Appendix 3 of the *MDSG*. The time allocated for NDS review is of course in addition to a screening period.

Manufacturers/sponsors of such products are strongly encouraged to request a pre-submission meeting with HC, in order to obtain clarification on which specific NDS Application requirements apply to disinfectant products considered as New Drugs.

3 SCOPE

The present guidance outlines the policy interpretation of the definition of drug in the *Food and Drugs Act and Regulations* as it applies to disinfectant products and provides guidance to manufacturers/sponsors regarding the preparation and submission of information necessary for authorizing the marketing of disinfectant drug products in Canada. It applies to all manufacturers/sponsors of disinfectants and disinfectant-sanitizers. This means that the Therapeutic Products Directorate (TPD) will assess Drug Identification Number (DIN) applications exclusively for disinfectant and disinfectant-sanitizer products. However, TPD will not review efficacy data representing non-food contact sanitizers which do not carry disinfectant claims, e.g., sanitizers with a mission to control plant pathogens such as those used in greenhouses, odor control sanitizers, and swimming pool sanitizers. Application requirements for these non-food contact sanitizers which do not fall under the regulatory jurisdiction of the TPD, should be directed for review in accordance with the *Pest Control Products Act*, (PCPA), to the Pest Management Regulatory Agency (PMRA).[13]

4 BACKGROUND

This guidance is provided to assist applicants:

- in identifying antimicrobial products which are classified as disinfectant drugs or disinfectants used for pest control (PCP),
- in preparing complete application packages for the approval of disinfectant drugs,
- in understanding the submission options available, and
- in labelling the products to meet Canadian regulatory requirements,

This guidance document supersedes the April 1999 edition of the *Disinfectant Drug Guidelines*, and reflects a number of changes which have occurred within the organizational structure and procedures of Health Canada.

5 GUIDANCE FOR IMPLEMENTATION

This section describes:

- the division of responsibilities between the Therapeutic Products Directorate (TPD) and the Pest Management Regulatory Agency (PMRA),
- the scientific and regulatory definitions,
- the regulatory classification and labelling of disinfectants,
- as well as the requirements which accompany each application option available in seeking pre-market approval.

5.1 Roles and Responsibilities

Between April 1, 1997 and September 12, 2001, TPD administered a "single window" approach, established in cooperation with PMRA, in order to streamline the premarket registration process and eliminate overlap of review activities for certain types of disinfectant products. TPD could, therefore, issue both Pest Control Product (PCP) registration numbers and/or Drug Identification Numbers (DINs) for products deemed acceptable upon completion of the premarket review.

In application of the September 12, 2001 amendment of the *Pest Control Products Regulations*, TPD ceased to issue PCP registration numbers but now continues to be responsible for the premarket review of applications for products classified as disinfectant drugs, with or without associated sanitizer uses. Submission applications (DIN) for these latter product types should be sent to:

Submission and Information Policy Division
Therapeutic Products Directorate
Health Canada
Finance Building, A.L. 0201A1
101 Tunney's Pasture Driveway
Tunney's Pasture
Ottawa, Ontario K1A 0K9

Products that are intended for controlling plant pathogens and other pests should be directed to PMRA (see section 3 above). Contrary to the practice in effect before the September 12, 2001 amendment of the *PCP Regulations*, TPD no longer issues simultaneous DIN and PCP registration numbers for a single product. Hard surface disinfectants that are intended for both pest control and the prevention of infectious

disease transmission from hard non-porous surfaces or inanimate objects to human beings and animals, are exempt from the *Pest Control Products Act and Regulations*, but remain subject to the *Food and Drugs Act and Regulations*; therefore, these products require a DIN on their label but not a PCP registration number. Nonetheless, some pest control claims may be found acceptable on a DIN label if approved by PMRA.

PMRA remains responsible for antimicrobial pest control products labelled with only sanitizer claims, as well as disinfectant products used for purposes **other than** prevention of a human or animal disease. For example, greenhouse disinfectants intended to control plant pathogens are evaluated by the PMRA. Applications for registration of material preservatives, slimicides, algaecides, swimming pool biocides, wood preservatives and oil field microbicides should also be sent to the PMRA.[13]

For further details regarding the division of responsibilities between TPD and PMRA, please contact:

BGIVD Enquiries
Bureau of Gastroenterology, Infection and Viral Diseases
Therapeutic Products Directorate
Health Canada
Finance Building, A.L. 0202D1
101 Tunney's Pasture Driveway
Tunney's Pasture
Ottawa, Ontario K1A 0K9
BGIVD_Enquiries@hc-sc.gc.ca

5.2 Scientific and Regulatory Definitions

For the purpose of obtaining a DIN, the term "disinfectant", as defined and interpreted in this guidance, is considered to include bactericides, fungicides, virucides, mycobactericides, tuberculocides, sporicides, sterilants, or combinations of these. A disinfectant without specific target organisms indicated on the product label is regarded only as a bactericide. The following glossary provides further information based on the publication ***Assessment of Efficacy of Antimicrobial Agents for Use on Environmental Surfaces and Medical Devices***, CAN/CGSB-2.161-97, *Tel: 1-800-665-2472 Canada only, and 819-956-0425 outside Canada*.[1] See also Tables 5-1 and 5-2.

Disinfectant: An antimicrobial agent capable of destroying pathogenic and potentially pathogenic microorganisms on environmental surfaces and inanimate objects. For the purpose of the present guidance, disinfectants also include disinfectant-sanitizer products, i.e., those with both disinfection and sanitization uses. Various levels of disinfection are defined in the last column of Table 5-1.

Hard Surface Disinfectant: A disinfectant that kills pathogenic and potentially pathogenic microorganisms on hard non-porous inanimate surfaces or inanimate objects.

Sporicide: An antimicrobial agent capable of destroying bacterial spores. It is considered unacceptable to label a non-sporicidal disinfectant with claims against the vegetative cells of spore-forming bacteria whose spores may be the primary means of spread of healthcare-associated infections. In such cases, the very listing of spore-forming bacteria could mislead users into wrongly assuming that the disinfectant has sporicidal effectiveness.

Virucide: An antimicrobial agent capable of destroying viruses.

Bactericide: An antimicrobial agent capable of destroying bacteria, but not necessarily bacterial spores or mycobacteria.

Fungicide: An antimicrobial agent capable of destroying fungi, including their spores.

Mycobactericide: An antimicrobial agent capable of destroying mycobacteria.

Tuberculocide: Synonymous with Mycobactericide.

Sanitizer: A product that reduces the level of microorganisms present by significant numbers, e.g., 3 $\log_{10}$ reduction (99.9%) or more, or to acceptable levels established by federal or provincial health authorities.

Note: See Tables 5-1 and 5-2.

TABLE 5-1 Classifications

Device	Device Definition	Disinfectant Class	Definition of Disinfectant Class
Critical	Present a high risk of infection if they are not sterile, i.e., contaminated with any organism, including spores. Routinely penetrate the skin or mucus membranes into normally sterile areas of the body, (e.g., implants, scalpels, needles, surgical instruments, laparoscopes), or come into direct contact with recirculating body fluids, (e.g., kidney dialysis tubing and dialyzers, or blood oxygenators).	Gaseous sterilant, and Critical device sporicide, also referred to as Critical sporicide	A disinfectant which helps achieve sterilization.
Semi-critical	Contact with mucous membranes during use but do not usually penetrate normally sterile areas of the body, e.g., endoscopes, anesthesia breathing circuits, respiratory therapy equipment, dental mirrors, etc.	High-level Disinfectant	A disinfectant that kills all microbial pathogens, except large numbers of bacterial endospores, when used according to labelling.
Non-critical	Contact only intact skin during routine use, e.g., stethoscopes, bedpans, etc.	Intermediate-level Disinfectant	A disinfectant that kills all microbial pathogens, except bacterial endospores, when used according to labelling.
		Low-level Disinfectant	A disinfectant that kills pathogenic and potentially pathogenic microorganisms on hard non-porous inanimate surfaces or inanimate objects, when used according to labelling.

TABLE 5-2 Evaluation Criteria

Claim[1]	**Device or Surface**[2]	**Efficacy**[3]
Sporicide	Any device or surface	CGSB-2.161 (AOAC) Sporicidal Test [4, 5]
Mycobactericide	Semi-critical devices	CGSB-2.161 Section 6.13 referring to AOAC [4, 5]
	Non-critical devices or environmental surfaces in health care facilities.	CGSB-2.161 Section 6.13 referring to AOAC [4, 5]
Virucide	Semi-critical devices	CGSB-2.161 Testing of Virucides (Polio I virus) [4]
	Non-critical devices and environmental surfaces in health care facilities and food premises where food is manufactured, processed or kept.	CGSB-2.161 Testing of Virucides. If efficacy against Polio I has not been demonstrated, efficacy against specific viruses should be demonstrated and these viruses named on the label in the absence of a general virucidal claim. Efficacy data and specific directions for use required if bloodborne viruses are involved [4].
Fungicide	Semi-critical devices	CGSB-2.161 (AOAC) Fungicidal Test [4]
	Non-critical devices and environmental surfaces in health care facilities and food premises where food is manufactured, processed or kept.	CGSB-2.161 (AOAC) Fungicidal Test [4]
Disinfectant	Semi-critical devices (High-level Disinfectant)	CGSB-2.161 (AOAC) Sporicidal test. Sporicidal in not more than 10 hours [4, 5]. CGSB-2.161 Section 6.13 referring to AOAC. Disinfectant contact time not less than that required for mycobactericidal activity [4, 5].
	Intermediate-Level Disinfectant	CGSB-2.161 Section 6.13 referring to AOAC. Disinfectant contact time not less than that required for mycobactericidal activity [4, 6].
	Non-critical devices and hard non-porous environmental surfaces (Low-level Disinfectant)	CGSB-2.161 (AOAC) Use Dilution Test should demonstrate efficacy against *Salmonella*, *Staphylococcus* and *Pseudomonas* [4, 6].

(1) Except for the purpose of the precleaning or storage of devices before or after sterilization, only sporicidal claims are acceptable for critical devices.
(2) The type of device, e.g., Spaulding classification, environmental surface or area should be specified on the label, with examples, as appropriate (Table 5-1).[2, 3]
(3) These criteria are not directly applicable to gaseous sterilants or disinfectants for contact lenses.
(4) Supporting data should be submitted with the DIN application.
(5) The titre of the inoculum must be sufficient to be able to demonstrate at least a 6 log kill.
(6) The titre of the inoculum must be sufficient to be able to demonstrate at least a 4 log kill.

5.3 Regulatory Classification

Currently, a disinfectant antimicrobial product may be classified as either or both:

- a **drug**, as defined by the *Food and Drugs Act*:

  any substance or mixture of substances manufactured, sold or presented for use in

  (a) the diagnosis, treatment, mitigation or prevention of a disease, disorder, or abnormal physical state, or its symptoms, in human beings or animals

  (b) restoring, correcting or modifying organic functions in human beings or animals,

  (c) disinfection in premises where food is manufactured, prepared or kept,

- a **pest control product**, as defined by the *Pest Control Products Act*:

  (*a*) a product, an organism or a substance, including a product, an organism or a substance derived through biotechnology, that consists of its active ingredient, formulants and contaminants, and that is manufactured, represented, distributed or used as a means for directly or indirectly controlling, destroying, attracting or repelling a pest or for mitigating or preventing its injurious, noxious or troublesome effects;

  (*b*) an active ingredient that is used to manufacture anything described in paragraph (*a*); or

  (*c*) any other thing that is prescribed to be a pest control product.

Both drug and pest control products are regulated products in Canada and require a **Drug Identification Number** (DIN) or a **Pest Control Product Registration Number** (PCP), respectively, prior to marketing.

The determination of the classification of a product is outlined below and is made in accordance with the definitions of Drug and Pest Control Product. Disinfectants are classified as **drugs** if the label states in specific terms, that the product is intended to be used:

I. as a disinfectant on environmental surfaces and other inanimate objects for the mitigation or prevention of disease in humans or animals, regardless of use sites, places or facilities;

or

II. for the sterilization and/or disinfection of medical devices, including, but not limited to contact lenses, hospital linens, and surgical, medical or dental instruments, such as endoscopes, catheters, aspirator tubes and thermometers.

Disinfectants and other antimicrobial products, such as sanitizers, are classified as **pest control products**, as defined in the *Pest Control Products Act*, if the product is for use on surfaces other than I and II above, such as:

III. Products that are for disinfection or other antimicrobial purposes in the immediate environment of animals for pest control.

IV. Products that are for disinfection or other antimicrobial purposes in swimming pools, spas and in all circumstances other than those described as subject to the *Food and Drugs Act*.

With the September 12, 2001 amendment of the *PCP Regulations*, the regulatory overlap for hard surface disinfectant products between TPD and PMRA, was reduced by consolidating the regulatory administration of disinfectant and disinfectant-sanitizer products within a single window at TPD.

5.4 Labelling

This section is intended to help the applicant in preparing acceptable labelling for disinfectant drugs. Applicants should also refer to Sections C.01.004 and C.01.005 of the *Food and Drug Regulations* and be prepared to provide, on request, evidence of safety and efficacy for the stated claims or uses.

The applicant should provide with the DIN submission, all draft labelling of the drug product (e.g., for the inner and outer packages, for the activator, promotional material, etc.). For the timely review of products with an existing DIN, it is recommended that both the current and the proposed labelling be submitted for review as specified in section 5.7.3 of the present guidance.

As certain requirements are clearly defined in the *Food and Drugs Act and Regulations,* these aspects of the labelling are excluded from routine evaluation but are subject to verification. Examples include:

- Location of the Drug Identification Number (DIN) on the main panel of the label.

- Declaration of the Net Contents. Disinfectants are usually liquids packaged under atmospheric pressure. It is standard practice to declare this item using volume units (e.g., 500 mL). Powders, solids, and aerosol sprays are usually declared in mass units (e.g., 500 g). Tablets or other forms of unitized packaging are usually declared by count. Volume and mass should be expressed in metric units, using proper abbreviations (e.g., 250 g, 500 ml, or 1 L).

- Declaration of the Lot Number (Section C.01.004 of the *Food and Drug Regulations*). The lot number is assigned by the manufacturer to a production batch or unit. This number, composed of letters or figures or both, should appear on the product's label or container. The lot number that appears on the product should be traceable in manufacture and identifiable in distribution. It should be preceded by any one of the following: Lot; Lot Number; Lot No.; or (L).

- Inclusion of appropriate symbols and cautionary statements for pressurized metallic containers (Section A.01.061 – A.01.063 of the *Food and Drug Regulations*).

- Expiration dating of the product in its marketed packaging (Section C.01.004 of the *Food and Drug Regulations*).

- Security packaging requirements for disinfectants for contact lenses, including a statement or illustration drawing attention to the security feature (Section A.01.065 of the *Food and Drug Regulations*).

Applicants should also consider the following particulars when preparing labelling for a disinfectant drug.

5.4.1 Name of the Product

The label should state the brand name for the disinfectant, that has been selected by the applicant.

5.4.2 Name and Address of the Submission Sponsor

The name of the manufacturer/sponsor, who is responsible for the product and to whom the DIN is assigned, should appear on the label of the product. If the address of the submission manufacturer/sponsor is not in Canada, then the name and address of the principal place of business in Canada of the importer or agent should also appear on the label. In either case the address must be sufficiently detailed to allow the delivery of a letter bearing that address as written. It is common practice to give a complete mailing address.

5.4.3 Active Ingredients

The identity and concentration of each active ingredient in the product should be stated. "Active" (or "medicinal") ingredients are those ingredients which impart the antimicrobial activity to the product. Concentration is usually expressed as a percentage on a weight-per-volume basis (e.g., 0.25 % w/v). This information and the dilution rate stated under the directions for use, are needed to calculate the in-use concentrations of the active ingredients.
For disinfectants that were also subject to the *Pest Control Products Act* (PCPA) prior to the September 12, 2001 amendment of the *PCP Regulations*, the guarantee statement that identifies the active ingredient on a weight-per-volume basis will normally be considered acceptable for the declaration of active ingredients under the *Food and Drugs Act*.

5.4.4 Intended Use

The present section describes the information that is considered necessary for the clear communication of the purpose of the product.

5.4.4.1 Claims

The label should clearly identify the purpose of the product (e.g. as a disinfectant, sterilant, sporicide, bactericide, virucide, fungicide, etc., or a combination of these), so that the user will clearly understand its intended uses and limitations.

5.4.4.2 Area or Site of Use

The label should indicate the type of facility where the disinfectant product is to be used (e.g., premises where food is manufactured, processed or kept, health care facilities, etc.) and the types of inanimate objects (e.g., work surfaces, floors, walls in patient care areas, etc.) or medical devices (e.g., bronchoscopes, bedpans, contact lenses, etc.) to be disinfected. In addition, for contact lenses, the type of lens (e.g., soft, hard, gas permeable, etc.) should be specified.

The various uses may be separated on the label. For example, the word "disinfectant" may be part of the product name and "for use on floors and walls in health care facilities such as hospitals, nursing homes, etc." may appear elsewhere on the label, even as part of the directions for use.

If there are several intended drug uses, although a separate statement for each use is preferred, similar uses can be grouped together. In any case, there should be no ambiguity to the user regarding the intended use of the product, or how it is to be employed for each of its intended uses.

With respect to the disinfection of medical devices, the device and the manner in which it is used must be considered. The "Spaulding Classification" (Table 5-1) is generally accepted as a strategy for the classification of medical devices which comes in contact with the patient's body and for the establishment of levels of germicidal activity required for disinfection/sterilization.[2] This classification is important in determining the characteristics of the disinfectant and the type of efficacy data that is required (Table 5-2).

5.4.5 Directions for Use

Directions for use should provide explicit information relevant to the effective use of the disinfectant. The following are examples of factors which should be considered:

I. The label should provide specific instructions to the user for preparing the in-use dilution of the product in order to achieve the intended antimicrobial effect. It should also indicate or refer the user to the level of hardness of the product diluent at the time of testing. Metric units or ratios should be used, and the type of use-dilution water should be specified. For example: "Dilute 25 mL of product to 1 L with tap water," or "Mix 1 part product with 39 parts tap water". Quantities may also be expressed in non-metric units, but they should be clearly identified to avoid confusion [e.g., 3.79 L (1 U.S. gallon)].

   More than one dilution may be specified if several different applications are intended. The dilution that is intended for each application should be clear to the user. Acceptable different applications are considered to be uses that are easily discernible by the user, e.g., floors and walls, toilet bowl disinfection, semi-critical medical devices, etc. It is not considered acceptable to indicate different dilution levels for use against specific microorganisms or groups of microorganisms, since a user is unable to readily determine which microorganisms are present on a target surface. Additional information about dilutions for non-drug applications, such as sanitizing and precleaning, is permitted on the label, provided that these uses are separate and clearly identified.

II. Products marketed as aerosol sprays or as wipes or towelettes are generally assessed on the basis of the efficacy of the liquid disinfectant itself. In that case, it is recommended to utilize the *Use-Dilution* methods of the Association of Official Analytical Chemists (AOAC), or the AOAC method on *Germicidal Spray Products as Disinfectants*, modified as appropriate.[17] The directions for use should clearly indicate that the

surface is to be thoroughly wetted and left as such for the appropriate contact time, i.e., the spray or towelette is regarded simply as a means of applying the disinfectant to the surface. If the product is intended to be used for other purposes, e.g., a "spray and wipe", the manufacturer/sponsor should submit data to support claims of efficacy for use under these conditions.

III. Contact times, i.e., the length of time the disinfectant shall be in contact with the surface to achieve the desired result, should be stated, e.g., disinfection, sanitization. More than one contact time may be specified if several different applications are intended. The contact time that is intended for each application should be clear to the user. It is not considered acceptable to indicate different contact times for use against specific microorganisms or groups of microorganisms, since a user is unable to readily determined which microorganisms are present on a target surface. For example, it is not considered acceptable to make reference to a 5 minute contact time for efficacy against vegetative bacteria and a 10 minute contact time for efficacy against fungi.

IV. If the product is to be used at a temperature other than 20 ^{o}C, this temperature should be specified and the label should indicate that heating or cooling to the specific temperature is required for efficacy.

V. If applicable, the volume and directions for the use of an activator should be included.

VI. The efficacy of a disinfectant may diminish with time or the conditions under which it is used. Therefore, in addition to the expiry date of the disinfectant in its original packaging, the labelling for products not labelled for single use should clearly indicate their expiry dating after activation and/or dilution and under re-use conditions, as appropriate. It is recognized that an "official" procedure for establishing the expiry date for re-use solutions has not yet been defined. Nevertheless, in order to claim that a product is for re-use, data demonstrating efficacy of the product under labelled re-use conditions are required for each labelled application. The use of chemical test strip indicators or ampoules should be specified with clear directions for use. Applicants are encouraged to emphasize on the product labelling, that monitoring of the concentration(s) of active ingredient(s) of the product before each use may be necessary and that the

user is not to rely entirely on the elapsed time, e.g., days in use. It would also be useful for applicants to consider stating acceptable types of containers for re-use of the disinfectant, as well as the specifications for re-use, such as contact time, temperature, and minimum effective concentration (MEC) of active ingredients.

VII. The presence of organic soil reduces the effectiveness of disinfectants. Therefore, labelling of disinfectants for use on medical devices should specify that the device is to be thoroughly cleaned prior to its disinfection. It is also appropriate to indicate that heavy soil is to be removed from environmental surfaces prior to disinfection.

VIII. Appropriate rinse procedures to ensure the absence of unacceptable residues on the surface or device after disinfection or sterilization are required. As an example, for premises where food is manufactured, processed or kept and unless otherwise indicated by the Bureau of Chemical Safety, Food Directorate, Health Products and Food Branch, applicants are required to include a statement to the effect that, if used on surfaces which come into contact with food, the surfaces must be thoroughly rinsed with potable water after disinfection (see sections 5.4.6.3 and 5.7.5.5).[16] For medical devices, specific instructions for rinsing the devices to remove all trace of the disinfectant and disinfectant by-products are required, e.g., rinse thoroughly with sterile water, potable water, saline, etc., as appropriate. Rinse procedures for critical and semi-critical instruments should ensure that the level of hygiene achieved is not compromised, i.e., sterility or high-level disinfection, respectively.

IX. It is not acceptable to make reference to “Repeat if necessary” or similarly vague wording in the directions for use. Complete directions for use should include all aspects such as pre-cleaning requirements, dilution rate, contact time, contact temperature, etc., that result in efficacy of the product for all labelled claims.

X. For products labelled with efficacy claims against bloodborne viral pathogens such as HIV, HBV and HCV, the following additional labelling criteria should be included:

a) As for all disinfectant drugs, there should be no reference on the labelling, to the treatment or prevention of infectious diseases. The term "HIV" is acceptable, but should also be identified as "Human Immunodeficiency Virus". Similarly, the terms HBV and HCV are acceptable, but should also be respectively identified as “Hepatitis B Virus” and “Hepatitis C Virus”.

b) Directions for use should indicate that the product is intended for use against the bloodborne pathogens listed on the labelling, e.g., HIV, HBV, HCV, in settings where these microorganisms would be expected to be encountered, such as settings where contamination by blood or body fluids is likely.

c) Directions for use should also provide specific decontamination procedures, including:

i) The need for surfaces to be cleaned prior to disinfection should be identified.

ii) Personnel that clean items soiled with blood or body fluids should be cautioned to wear appropriate barrier protection, such as disposable gloves, gowns, and masks.

iii) Directions for the disposal of cleaning materials and waste should be specified.

iv) Directions for proper dilution and application of the disinfectant, including appropriate contact times, should be given.

These criteria which apply to all bloodborne viruses, obviate the need for a labelling standard specifically designed for quaternary ammonium compounds for use against HIV.

The present revision of the Disinfectant Drug Guidance includes listing HIV as other infectious microorganisms on disinfectant labels, providing satisfactory efficacy data are submitted at the time of a DIN application. The revision mirrors a shift of the focus of infection control from HIV in particular to bloodborne viruses in general, which was prompted by:

- a much improved understanding of HIV transmission;
- current infection control practice, which focuses on preventing the transmission of bloodborne pathogens but not simply on HIV, an easy-to-kill virus when present on hard surfaces;
- a lower prevalence of HIV and a lower risk of transmission through parenteral exposure than other bloodborne pathogens, e.g., Hepatitis B and C viruses;

- national and international public health education campaigns advocating no risk of HIV transmission through casual contact and environmental surfaces.

- The transmission of bloodborne viral pathogens has been documented by the parenteral route through contact with contaminated body fluids, e.g., blood. Viruses in body fluids are almost always surrounded by an organic matrix. This may protect them from disinfectant activity, particularly when dried on a surface. To be effective, therefore, a disinfectant must access the viruses against and through that bloodborne organic material. See references 4 through 9.

XI. It has been TPD's practice not to permit claims of efficacy against Hepatitis B virus, unless the applicant can provide data to demonstrate this specific virucidal efficacy using a methodology which has been accepted by an internationally recognized standards organization. See also section 2.1.

XII. As specified in section 2.1, the bovine viral diarrhea virus has now been found acceptable as a surrogate organism in demonstrating efficacy against Hepatitis C virus.

5.4.6 Safety and Efficacy Testing

Manufacturers/sponsors responsible for the product should have data available to provide to the Therapeutic Products Directorate (TPD) on request, with a view to establish the safety of their product for its intended use. In addition to acute and chronic toxicity and other safety issues related to the use of the product, the presence and significance of potential residues represent important safety concerns to investigate, especially with respect to food and medical devices which come in direct contact with the human body.

5.4.6.1 Disinfectants

Manufacturers/sponsors should also have evidence available to support all claims stated on the label and should provide this evidence, on request, for evaluation by TPD. Except for gaseous sterilants and contact lens disinfectants, the minimum evaluation criteria generally recommended by TPD for disinfectants, are outlined in Table 5-2. This Table also identifies situations which require the inclusion of efficacy data with the DIN submission, e.g., for disinfection of medical devices, efficacy claims against mycobacteria, and other microbiological pathogens. Disinfectant products which meet all of the criteria of an existing class

monograph or labelling standard, do not require the submission of efficacy data with the DIN application. Further information on application options and on the review process may be found in section 5.7.5.

Applicants should note the following requirements:

- the data used to establish the safety and efficacy of a product must relate directly to its formulation, as the safety and efficacy of a particular ingredient may be affected by other components of the formulation.
- evidence of efficacy of the product should be available to support claims of efficacy against specific microorganisms.
- efficacy data should be generated using product which is aged/stressed to the limit of its stated re-use period, for products having an expiry date and re-use life expectancy.
- testing of at least 3 samples, representing at least 3 separately compounded batches of product is included in the recommended methodology.
- labelled temperature for disinfection should be supported by efficacy testing conducted at the same temperature. For disinfection of inanimate environmental surfaces the test temperature should not exceed 22 ± 2 ^{o}C, as indicated in the recommended methodology.
- For products involving efficacy against mycobacteria, it is also recommended that an additional quantitative test be considered as part of the protocol.

For efficacy testing of disinfectants that are for use with a chemiclave, applicants should conduct testing under conditions that are consistent with use of the product as labelled, i.e., inoculated carriers should be exposed to the recommended chemiclave cycle. Providing test data generated using the disinfectant alone is generally considered insufficient, i.e., in the absence of a chemiclave. In addition, the product labelling should clearly specify the type of chemiclave (make, model, etc.) and the cycle (pressure, temperature, time, etc.) with which the disinfectant is intended to be used.

Applicants may find the following guidances to be sources of useful information:

- Guidance on the Content and Format of Premarket Notification Submissions for Liquid Chemical Germicides, 1996. United States Food and Drug Administration.[10]

- Premarket Notification Guidance Document for Contact Lens Care Products, 1997. United States Food and Drug Administration.[11]

5.4.6.2 Disinfectants Carrying Non-Food Contact Sanitizer Claims

In this guidance document, disinfectants carrying non-food contact sanitizer claims are referred to as disinfectant-sanitizers and the present section describes the safety and efficacy testing requirements for proving the sanitizing action of these disinfectants. In addition to efficacy data for disinfectant claims as required under sections **2.1** and **5.4.6.1** above, manufacturers/sponsors of disinfectant-sanitizers should also have evidence available to support all non-food contact sanitizer claims stated on the label; they should provide this evidence, on request, for evaluation by TPD, in accordance with the definition of a sanitizer, enunciated in section 5.2 of this guidance. The minimum evaluation criterion for non-food contact sanitizer claims recommended by TPD, is ASTM Method E1153-03 *Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate non-Food Contact Surfaces*.[18]

Similar to the regulatory discipline for disinfectants (see sections **2.1** and **5.4.6.1**), TPD may also accept for review data which are based on alternative methodologies as approved by internationally recognized standards organizations. As the regulatory decision will be based on the scientific validity of the study conducted, it is recommended to discuss with TPD any alternate methodology prior to its use.

Applicants should note the following requirements:

- the data used to establish the safety and efficacy of a product must relate directly to its formulation, as the safety and efficacy of a particular ingredient may be affected by other components of the formulation.

- evidence of efficacy of the product should be available to support claims of efficacy against specific microorganisms.

- efficacy data should be generated using product which is aged/stressed to the limit of its stated re-use period, for products having an expiry date and re-use life expectancy.

- testing of at least 3 samples, representing at least 3 separately compounded batches of product is included in the recommended methodology.

- labelled temperature for sanitization should be supported by efficacy testing conducted at the same temperature. For disinfection of inanimate environmental surfaces the test temperature should not exceed 22 ± 2 ºC, as indicated in the recommended methodology.

5.4.6.3 Food Contact Sanitizers

The regulatory assessment of food contact sanitizers is under the jurisdiction of the Chemical Health Hazard Assessment Division, Bureau of Chemical Safety, Food Directorate. See also reference 14. For details regarding the safety and efficacy testing requirements, please contact:

Chemical Health Hazard Assessment Division
Bureau of Chemical Safety
Food Directorate
Health Products and Food Branch
Sir Frederick G. Banting Research Centre, A.L. 2201B1
251 Sir Frederick Banting Driveway
Tunney's Pasture
Ottawa, Ontario K1A 0K9

Fax: (613) 990-1543
WEB: www.hc-sc.gc.ca/food-aliment

5.5 Precautionary Statements

Appropriate precautionary information for the safe and effective use of the product is required. The outer label should carry the precautionary signal words and hazard statements. Other precautionary statements and information may be placed on an inner label, provided that there is reference to them on the outer label. Examples of such precautionary statements which may be appropriate include:

- keep out of reach of children
- not for internal use
- use in ventilated area
- avoid contact with eyes; use safety glasses; in case of contact, flush with water immediately and contact a doctor

- avoid contact with skin; use gloves; in case of contact with skin, flush immediately and thoroughly with water
- avoid contact with food
- may damage or corrode designated surfaces or device components
- not intended for use directly in the eye (disinfectants for contact lenses)

Phenolic disinfectants require a statement to the effect that the product is not to be used in hospital nurseries.

5.6 Colouring Agents

Any colouring agent may be used in disinfectant products, unless there is a safety issue related to its use, in accordance with Section C.01.040.2 (5) of the *Food and Drug Regulations*.

5.7 Application and Review Process

This section describes the documentation required when making a DIN submission and the types of review options available.

For information concerning a DIN Kit for disinfectant drugs, send a request including complete mailing address, telephone number, e-mail address, software application and preference for receiving the kit by e-mail, on diskette or in hard copy format (paper) to the Submission and Information Policy Division, Fax: (613) 941-7284. See complete address in Section 5.1 above.

5.7.1 Submission Documentation Required

The following lists describe the documentation required to accompany a DIN submission for a disinfectant product under the responsibility and jurisdiction of the Therapeutic Products Directorate (TPD). When applying for a DIN for a product, all of the information for the DIN application is required to be submitted. Only complete submission packages will be considered acceptable for review. Ensure that all the details requested on the forms are provided:

- Completed Drug Submission Application Form for: Human, Veterinary and Disinfectant Drugs - HC/SC 3011[15]

- Completed Submission Certification: DIN Submission Certification or Category IV Drug Submission Certification, as appropriate

- Submission Fee Application Form, DIN Submission

- Labelling: If the product complies with a Category IV Monograph, Labelling Standard or Labelling Guide, applicants should submit a letter confirming compliance with the particular standard, referenced by name and by date. See sections 5.7.5.1 through 5.7.5.5.

- Efficacy data, as appropriate based on Evaluation Criteria (Table 5-2)

Applicants may find the following documents useful in completing the DIN submissions:

- *Food and Drugs Act and Regulations*

The drug submission application form should be completed using the information specified in Section C.01.014.1

- Preparation of Drug Identification Number Submissions[12]

- Standard for the Fabrication, Control and Distribution of Antimicrobial Agents for Use on Environmental Surfaces and Certain Medical Devices, Guide-0049, 2004

- Assessment of Efficacy of Antimicrobial Agents for Use On Environmental Surfaces and Medical Devices CAN/CGSB-2.161-97.[1]

5.7.2 Changes to Products Currently on the Canadian Market

With respect to disinfectant drug products, a new Application for a Drug Identification Number (DIN) is required if there is any change to the applicant's name, product name, form, (e.g., solid, liquid, wipe, spray), route of administration, (e.g., type of surface or object), premises for disinfection or quantitative list of active ingredients, e.g., new active ingredients, changes to the strength of the active ingredients, etc. (Section C.01.014.1 (2) (a) to (f) of the *Food and Drug Regulations*). For such changes, submission sponsors are asked to submit a Drug Submission Application, description of the changes, copies of both the old and the new labelling with highlighted changes, DIN submission certification, fee form, fee, and supporting data, as appropriate, to Submission and Information Policy Division (see section 5.1).

A new DIN Application is not required if the change is limited to the type of use (human, veterinary), nonmedicinal ingredients including inactive colouring agents, use or purpose, dosage, or address of the manufacturer (Section C.01.014.1 (2) (g) to (k) of the *Food and Drug Regulations*).[15] In this case, TPD should be notified of the change in writing within 30 days, by contacting Submission and Information Policy Division (see section 5.1). The desired change will be screened to determine if a review is required. If the nature of the changes results in a significant change in the use, purpose or safety of the product, then submission of an application for a DIN is recommended.

5.7.3 Assignment of Drug Identification Numbers (DINs) According to Product Name

TPD's Policy *Assignment of Drug Identification Numbers (DINs) According to Product Name*, defines the options available for the assignment of DINs to applicants or submission manufacturers/sponsors who may, or may not, wish to identify a distributor or retail outlet on the label as part of the brand name (Issued on April 14, 1998, and updated on November 3, 2000).

Many of these types of DIN submissions, previously known as "duplicate products" or "private labels", may be processed directly, with a 45 day performance target, provided that the applicant submits the following:

- a DIN application, together with a draft of the new label, reflecting the change in brand name and/or the name of the applicant, as appropriate;
- a copy of the labelling most recently authorized by TPD;
- a letter signed by the company which:
    - i) indicates the brand name, DIN and date of issuance, and manufacturer of the "original" product, and;
    - ii) states that all aspects of the submission, with the exception of the name of the distributor and the brand name, if applicable, are identical to that of the "original" submission;
- for cross-referenced submissions, a letter from the company holding the DIN for the marketed product authorizing TPD to access their data to support the submission for the second product.

5.7.4 Change in Manufacturer/Sponsor's Name and/or Product Name

The Therapeutic Products Directorate's Policy: *Changes in Manufacturer's Name and/or Product Name*, defines the conditions and procedures for the administrative processing of drug submissions pertaining to a change in manufacturer's name and/or product name following a merger, buy-out or other corporate restructuring or as a result of a licensing agreement (Issued on April 14, 1998, and updated on January 3, 2001).

If a manufacturer/sponsor's name changes and/or the product name for a marketed drug product changes, a DIN Application for each affected drug product should be submitted to Submission and Information Policy Division (see section 5.1). The manufacturer/sponsor may request to keep the same DIN or request a new DIN. These types of DIN submissions are processed administratively, with a 45 day performance target, provided that:

- The product is currently marketed (notified) in Canada.
- A signed certification is submitted for the product, confirming that all aspects of the product and labelling material are identical to those previously authorized for that product, except for the changes to the manufacturer/sponsor's name and/ or the product name.

In the case of a product name change, the submission for the proposed modification should not make a claim that conflicts with the conditions of the previously issued DIN.

5.7.5 Monographs, Labelling Standard and Guide for Abbreviated Reviews

As listed in Table 5-3, sections 5.7.5.1 to 5.7.5.5 indicate the requirements under each individual Category IV Monograph, Labelling Standard or Labelling Guide for disinfectant products and food processing plant sanitizers, eligible for abbreviated reviews. See also section 2.2.1.

TABLE 5-3 Titles and Corresponding Sections of the Guidance for Category IV Monograph, Labelling Standard and Labelling Guide

Title	Section
Category IV Monograph: Hard Surface Disinfectants	5.7.5.1
Category IV Monograph: Contact Lens Disinfectants	5.7.5.2
Category IV Monograph: Toilet Bowl Disinfectant Cleaners	5.7.5.3
Labelling Standard: Ethylene Oxide Gaseous Sterilants	5.7.5.4
Labelling Guide: Food Processing Plant Sanitizers / Cleaners	5.7.5.5

5.7.5.1 Category IV Monograph: Hard Surface Disinfectants

I) **Description**:

This monograph applies to antimicrobial products which are classified as disinfectant drugs and specifically to products which are intended to be used as environmental hard surface disinfectants in health care facilities, food processing plants and/or domestic dwellings. The medicinal, i.e., active ingredients and their concentrations in Category IV products are restricted to those specified in this monograph. The medicinal, i.e., active ingredients should be identified on product labelling by the names given in Table 5-4 of this monograph (both preferred names and synonyms are considered acceptable).

This monograph does not apply to:

a) disinfectant products to be used on critical or semi-critical medical devices or instruments, including contact lenses (ref. to Category IV product monograph for contact lens disinfectants);

b) to products with claims for efficacy against:

- spores, as a sporicide, or as a sterilant
- pathogens, as a high-level disinfectant
- *Mycobacterium* species, including *M. tuberculosis*
- the Human Immunodeficiency Virus (HIV)
- the Hepatitis B and C Viruses (HBV and HCV)

II) **Pharmaceutical Quality**:

a) All medicinal (active) and nonmedicinal (inactive) ingredients and finished product, should as a minimum meet the specifications of Schedule B or equivalent standard. In the absence of a Schedule B standard, testing should be adequate to demonstrate the product's identity, potency, purity and quality.

III) **Ingredients**:

a) **Single Medicinal Ingredient Categories**:

i) Quaternary ammonium compounds
ii) Phenolics
iii) Iodophors
iv) Chlorine releasing compounds

A list of acceptable single medicinal ingredients for Category IV hard surface disinfectants is provided in Table 5-4.

b) **Combinations of Medicinal Ingredients**:

i) Combinations of any of the medicinal ingredients from the same category are permitted provided that the **total in-use concentration** of the combined ingredients is at the minimum stated in section IV) d) iv).

ii) Combinations of any of the medicinal ingredients from different categories listed in Guidance are permitted provided that the ingredient(s) from one of the categories is present at the minimal in-use concentration as stated in section IV) d) iv), and that the ingredients do not interact in a manner that reduces the disinfectant activity.

c) **Nonmedicinal Ingredients**:

Nonmedicinal ingredients should be restricted to the substances that are necessary for the formulation. Their concentration should not exceed the minimum required to provide their intended effect. Their presence should not adversely affect the efficacy or safety of the medicinal ingredient(s) and they should not interfere with assays and tests for the medicinal ingredients.

IV) **Labelling**:

a) This monograph describes the requirements that are specific to hard surface disinfectant drug products. Other requirements described in the *Food and Drugs Act and Regulations* should also be met.

b) **Unacceptable Claims**:

Statements such as non-toxic, non-irritant, safe, non-caustic, harmless, etc., are not considered appropriate for disinfectant drugs.

c) **Indications**:

All products should indicate:

i) for use in a health care facility (e.g, hospitals, dental clinic, nursing homes), a food processing plant, a commercial setting (i.e., schools, offices), and/or a residential home (i.e., domestic settings); and

ii) one or more of the following as applicable to the product:

1) disinfectant / disinfectant cleaner
2) kills bacteria (bactericide)
3) kills viruses (virucide)
4) kills fungi (fungicide)

d) **Directions for Use**

i) For all products complete directions for use as a disinfectant for inanimate environmental surfaces including:

- types of surfaces (e.g, floors, walls, countertops);
- specific instructions for the preparation of the in-use dilution in metric units of measure;
- mode of application;
- a contact time of 10 minutes if the product is to be rinsed or wiped off;
- a warning to the effect that all surfaces and/or objects coming in contact with children at the mouthing stage of development, are to be rinsed.

ii) The following additional statement should be indicated if the product is to be used in a food processing establishment:

- All surfaces that come into contact with food are to be rinsed with potable water after disinfection.[16]

NOTE: For disinfectants containing only chlorine-releasing medicinal ingredients, a rinse is not required if used at a concentration ≤ 200 ppm.

iii) The following additional statement should be indicated if the product contains phenolic compound(s) and is for use in health care facilities:

- not to be used in hospital nurseries.

iv) **In-use Solution Concentrations**

1)	Quaternary ammonium compounds	≥ 450 ppm
2)	Phenolics	≥ 700 ppm
3)	Iodophors	≥ 30 ppm
4)	Chlorine	≥ 100 ppm

v) **Warnings and First Aid Information**

1) For all products, warnings, precautionary statements and first aid information should be appropriate to the hazard.

2) For products intended to be used in food processing plants, the following statement:

- avoid contamination of food.

TABLE 5-4 Single Medicinal Ingredients

Category	Preferred name	Synonym
Quaternary ammonium compounds	Alkyl ethyl benzyl dimethyl ammonium chloride	
	Aralkonium chloride	Alkyl dimethyl-3, 4-dichlorobenzyl ammonium chloride
	Benzalkonium chloride	Alkyl dimethyl benzyl ammonium chloride
	Cetalkonium chloride	Cetyl dimethyl benzyl ammonium chloride
	Didecyl dimethyl ammonium chloride	Chloride didecyl dimethylammonium
	Dioctyl dimethyl ammonium chloride	Chloride dioctyl dimethylammonium
	Hexadecyl dimethyl benzyl ammonium chloride	Chloride hexadecyldimethylbenzyl ammonium
	Methyl dodecyl benzyl trimethyl ammonium chloride	Chloride methyl dodecyl benzyl trimethyl ammonium
	Octa decyl dimethyl benzyl ammonium chloride	Chloride octadecyl dimethylbenzyl ammonium
	Octyl decyl dimethyl ammonium chloride	Chloride octyl decyl dimethyl ammonium
	Octyl dimethyl ammonium chloride	Chloride octyl dimethyl ammonium
Phenolics	Chloro-ortho-phenylphenol	Chloro-2-phenylphenol
	Chlorophenol	
	Clorophene	o-benzyl-p-chlorophenol
	o-phenylphenol	orthoxenol
	p-phenylphenol	paraxenol
	p-tert-pentylphenol	p-tert-amylphenol

Category	Preferred name	Synonym
Iodophors	Nonylphenoxy polyethoxyethanol iodine complex	Nonoxynol iodophor a-(p-nonylphenyl)-omega-hydroxypoly (oxyethylene) iodine complex
	Polyethoxy polypropoxy polyethoxy ethanol iodine complex	Iodine polyethoxy polypropoxy polyethoxy ethanol
Chlorine releasing compounds	Calcium hypochlorite	
	Sodium hypochlorite	

5.7.5.2 Category IV Monograph: Contact Lens Disinfectants

I) **Description:**

This monograph applies to products in liquid or tablet form intended to be used to disinfect contact lenses. It does not apply to contact lens disinfectants that contain mercury or a salt or derivative thereof (Section C.01.036 of the *Food and Drugs Regulations*).

II) **Pharmaceutical Quality:**

a) All ingredient (medicinal and nonmedicinal) and finished product specifications should as a minimum meet Schedule B or equivalent standards. Where no schedule B monograph exists for the dosage form, specifications should be similar to those of a comparable compendial dosage form. In the absence of a Schedule B standard for any dosage form, testing should be adequate to demonstrate the product's identity, potency, purity and quality.

b) **Special Notes:** Manufacturers should meet as a minimum the requirements of Section XIII, Ophthalmic Preparations, of the **Therapeutic Products Directorate Guidelines*, Preparation of Drug Identification Number Submissions***, **February 1995**, with the exception of the requirements of Section XIII-B Conditions.[12]

III) **Ingredients:**

The medicinal, i.e., active ingredients, their concentrations and their combinations in Category IV products are restricted to those specified in this monograph.

a) **Single Medicinal Ingredients:**

The medicinal, i.e., active ingredients should be identified on product labelling by the names given in Table 5-5; both preferred names and synonyms are considered acceptable. This Table also indicates the acceptable concentrations corresponding to each active ingredient represented in a contact lens disinfectant.

TABLE 5-5 Single Medicinal Ingredients

Preferred name	**Synonym**	**Acceptable concentration**
Alkyltriethanolammonium chloride	Quaternium-16	≥ 0.03%
Benzalkonium chloride	Alkyl dimethyl benzyl ammonium chloride	≥ 0.01%
Chlorhexidine gluconate	Chlorhexidine digluconate	≥ 0.0035%
Hydrogen peroxide	Hydrogen dioxide	≥ 3%
Isopropyl alcohol	Isopropanol	≥ 15%
Polyaminopropyl biguanide		≥ 0.00005%
Polyquaternium-1	Polyquad	≥ 0.001%
Polyhexanide		≥ 0.0001%
Tris (2-hydroxyethyl) tallow ammonium chloride		≥ 0.013%

b) **Combinations of Medicinal Ingredients:**

The following combinations are considered acceptable. The lower limits for use as a single ingredient also apply when the ingredient is used in combination.

i) Chlorhexidine and EDTA

ii) Alkyltriethanolammonium chloride and EDTA

iii) Chlorhexidine, Polyaminopropyl biguanide and EDTA

iv) Polyquaternium-1 and EDTA

c) **Special Notes:**

EDTA may be considered to represent a medicinal ingredient if the manufacturer has data available which show that it is essential for the efficacy of the product. EDTA enhances the activity of a number of medicinal ingredients (e.g., chlorhexidine, benzalkonium chloride, polyquaternium-1, alkyltriethanolammonium chloride) by chelating calcium and magnesium ions.

d) **Nonmedicinal Ingredients:**

Nonmedicinal ingredients should be restricted to the substances that are necessary for the formulation of the particular dosage form. Their concentration should not exceed the minimum required to provide their intended effect. They should be harmless in the amounts used, their presence should not adversely affect the efficacy or safety of the medicinal ingredients, and they should not interfere with tests for the medicinal ingredients or, if present, antimicrobial preservatives.

IV) **Labelling:**

a) This monograph describes the requirements that are specific to this class of drugs. Other requirements described in the *Food and Drugs Act and Regulations* should also be met.

b) **Directions for Use**

i) Indications

All products should indicate:

- disinfectant (or antimicrobial solution), and
- use on a specific type(s) of contact lenses, eg., hard, soft (hydrophilic, tinted, etc.).

ii) Directions for Use:

- wash and dry hands thoroughly before handling the lenses;
- preclean the lenses prior to disinfection. (Unless the labelling clearly indicates that the disinfectant or antimicrobial solution is intended to clean the lenses in addition to disinfecting and the directions for use reflect this additional function);
- contact or soaking time required to disinfect the lenses;
- neutralising step, if appropriate (for example, use catalase for products containing hydrogen peroxide);
- rinse procedure after disinfection.

iii) Warnings

- If irritation develops with the use of this product, discontinue use and consult your eye care practitioner;
- Do not touch tip of the bottle to any surface since this may contribute to contamination of the solution;
- Always keep the bottle tightly closed;
- Always use fresh solution and discard after use. Do not reuse solution.

5.7.5.3 Category IV Monograph: Toilet Bowl Disinfectant Cleaners

I) **Description:**

This monograph applies to antimicrobial products which are classified as disinfectant drugs and specifically to products which are intended to be used as toilet bowl disinfectant cleaners in health care facilities, food processing plants and/or domestic dwellings. The medicinal, i.e., active ingredients and their concentrations in Category IV products are restricted to those specified in this monograph. The medicinal, i.e., active ingredients should be identified on product labelling by the names given in Table 5-6 of this monograph; both preferred names and synonyms are considered acceptable.

This monograph does not apply to products with claims for efficacy against:

a) spores, as a sporicide, a sterilant, or a high-level disinfectant
b) *Mycobacterium* species, including *M. turberculosis*
c) the Human Immunodeficiency Virus (HIV)
d) the Hepatitis B and C Viruses (HBV and HCV)

II) **Pharmaceutical Quality:**

All medicinal (active) and nonmedicinal (inactive) ingredients and finished product, should as a minimum meet the specifications of Schedule B or equivalent standard. In the absence of a Schedule B standard, testing should be adequate to demonstrate the product's identity, potency, purity and quality.

III) **Ingredients:**

a) **Single Medicinal Ingredient Categories:**

i) Quaternary ammonium compounds
ii) Hydrogen chloride

A list of acceptable single medicinal ingredients for Category IV toilet bowl disinfectant cleaners is provided in Table 5-6.

b) **Combinations of Medicinal Ingredients**:

i) Combinations of any of the medicinal ingredients from the same category are permitted provided that the ***total in-use concentration*** of the combined ingredients is at the minimum stated in section IV) d) ii).

ii) Combinations of any of the medicinal ingredients from different categories listed in Table 5-6 are permitted provided that the ingredient(s) from one of the categories is present at the minimal in-use concentration as stated in section IV) d) ii), and that the ingredients do not interact in a manner that reduces the disinfectant activity.

Note: Phosphoric acid can be considered to be a medicinal ingredient if used in a combination product and if the manufacturer has data available which show that it is essential for the efficacy of the product.

c) **Nonmedicinal Ingredients:**

Nonmedicinal ingredients should be restricted to the substances that are necessary for the formulation. Their concentration should not exceed the minimum required to provide their intended effect. Their presence should not adversely affect the efficacy or safety of the medicinal ingredient(s) and they should not interfere with assays and tests for the medicinal ingredients.

IV) **Labelling:**

a) This monograph describes the requirements that are specific to toilet bowl disinfectant cleaners for use in healthcare facilities, food processing plants and/or domestic dwellings. Other requirements described in the *Food and Drugs Act and Regulations* should also be met.

b) **Unacceptable Claims:**

Statements such as non-toxic, non-irritant, safe, non-caustic, harmless, etc., are not considered appropriate for disinfectant drugs.

c) **Indications**:

All products should indicate:

i) for use in a health care facility (e.g., hospitals, dental clinic, nursing homes), a food processing plant, a commercial setting (i.e., schools, offices), and/or a residential home (i.e., domestic settings); and

ii) one or more of the following as applicable to the product:

1) disinfectant / disinfectant cleaner
2) kills bacteria (bactericide)
3) kills viruses (virucide)
4) kills fungi (fungicide)

d) **Directions for Use**

i) For all products complete directions for use as a toilet bowl disinfectant cleaner including:

- specific amount/volume of disinfectant to be used
- mode of application;
- a contact time of at least 10 minutes followed by a flush of the toilet;

ii) **In-use Solution Concentrations**

1) Quaternary ammonium compounds ≥ 450 ppm
2) Hydrogen choride ≥ 9.5%

iii) **Warnings and First Aid Information**

For all products, warnings, precautionary statements and first aid information should be appropriate to the hazard.

TABLE 5-6 Single Medicinal Ingredients

Category	Preferred name	Synonym
Quaternary ammonium compounds	Alkyl ethyl benzyl dimethyl ammonium chloride	
	Aralkonium chloride	Alkyl dimethyl-3, 4-dichlorobenzyl ammonium chloride
	Benzalkonium chloride	Alkyl dimethyl benzyl ammonium chloride
	Cetalkonium chloride	Cetyl dimethyl benzyl ammonium chloride
	Didecyl dimethyl ammonium chloride	Chloride didecyl dimethylammonium
	Dioctyl dimethyl ammonium chloride	Chloride dioctyl dimethylammonium
Category	**Preferred name**	**Synonym**
	Hexadecyl dimethyl benzyl ammonium chloride	Chloride hexadecyldimethylbenzyl ammonium
	Methyl dodecyl benzyl trimethyl ammonium chloride	Chloride methyl dodecyl benzyl trimethyl ammonium

	Octa decyl dimethyl benzyl ammonium chloride	Chloride octadecyl dimethylbenzyl ammonium
	Octyl decyl dimethyl ammonium chloride	Chloride octyl decyl dimethyl ammonium
	Octyl dimethyl ammonium chloride	Chloride octyl dimethyl ammonium
Inorganic Acid	Hydrogen chloride	Hydrochloric acid
Chlorine releasing compounds	Calcium hypochlorite	
	Sodium hypochlorite	

5.7.5.4 Labelling Standard: Ethylene Oxide Gaseous Products Used in Sterilization Processes

I) **Description:**

This labelling standard applies to ethylene oxide products labelled for use as gaseous sporicides in sterilizing medical instruments/devices. It does not apply to *any other liquid and gaseous drug products* to be used in sterilizing procedures and equipments for medical instruments/devices.

II) **Pharmaceutical Quality:**

a) All ingredients (medicinal and nonmedicinal) and finished product, should, as a minimum, meet the specifications described in the publications referred to in Schedule B to the *Food and Drugs Act* or equivalent standards. In the absence of a Schedule B standard, testing should be adequate to demonstrate the product's identity, potency, purity and quality.

b) **Special Notes:**

i) Validation of sterilization and sterility assurance should be conducted according to the specifications in *The United States Pharmacopoeia, USP 23, NF 18*, Chapter <1211>.

ii) The validation process should involve biological indicators prepared as detailed in *The United States Pharmacopoeia, USP 23, NF 18,* pages 202-204 and Chapter <1035>.

III) **Ingredients:**

a) **Single Medicinal Ingredient:**

Ethylene oxide 10-100%

b) **Nonmedicinal Ingredients:**

Nonmedicinal ingredients should be restricted to the substances that are necessary for the formulation. Their concentration should not exceed the minimum required to provide their intended effect. Their presence should not adversely affect the efficacy or safety of the ethylene oxide and they should not interfere with assays and tests for the medicinal ingredients.

IV) **Labelling:**

a) This labelling standard describes the requirements that are specific for this type of product. Other requirements described in the *Food and Drugs Act and Regulations* should also be met.

b) **Unacceptable Claims:**

Statements such as non-toxic, non-irritant, safe, non-caustic, harmless, etc., are not considered appropriate for this type of product.

c) **Indications**:

For all products the labelling should indicate:

i) For use in a sterilizer (model and type should be indicated) for medical instruments/devices in a health care facility (e.g, hospitals, dental clinic, etc.) .

d) **Directions for Use**

i) For all products complete directions for use as a gaseous products in a sterilizer **should be specified**, including:

- types of instruments (e.g, implants, surgical instruments, laparoscopes, burs, needles, etc.);
- adequate wrapping procedures;

- adequate load procedures;
- specific precleaning procedures;
- specific instructions for the safe and effective use of the product including specific cycle times, temperature, humidity, pressure of the ethylene oxide in the exposure chamber, adequate ventilation/aeration procedures, etc.
- adequate in-process validation procedure (i.e., use of biological indicators) as indicated in Section II) **b**) ii).

ii) A reference to an operator manual is considered acceptable provided that all the information listed in Section IV) **d**) i) is adequately addressed in the manual.

iii) **Warnings:**

For all products, the label should indicate the following symbols and statements:

- the warning statement DANGER associated with the appropriate symbol
- the hazard symbol, signal word and hazard statements for pressurized containers as described in Sections A.01.060.1 to A.01.062 of the *Food and Drugs Regulations*
- ETHYLENE OXIDE VAPOUR IS HARMFUL
- Avoid breathing vapours
- Keep container closed
- May cause burns
- Avoid contact with skin or eyes
- This product is limited to use by medical professionals or appropriately trained personnel for ethylene oxide sterilization in medical use areas.

iv) **First aid and toxicological information:**

For all products, the labelling should indicate the following statements:

- In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes;
- **For contact with eyes,** call a physician;
- Remove and wash contaminated clothing before reuse;
- If ethylene oxide was swallowed, drink egg whites, gelatin solution or, if these are not available, drink large quantities of water. Call a physician.

5.7.5.5 Labelling Guide: Food Processing Plant Sanitizers / Cleaners

I) **Description:**

This guide applies to antimicrobial products which are classified as food contact sanitizers/cleaners and specifically to products which are intended to be used as environmental sanitizers/cleaners in food processing plants. Its exclusive purpose is for the labelling of food contact sanitizers/cleaners, as the evaluation of these products remains under the jurisdiction of the Chemical Health Hazard Assessment Division. See section **5.4.6.3** for contact information.

The active ingredients and their concentrations in food contact sanitizers/cleaners are restricted to those specified in this guide. The active ingredients should be identified on product labelling by the names given in Table 5-7 of this guide; both preferred names and synonyms are considered acceptable.

This guide does not apply to:

a) disinfectant products to be used on environmental surfaces and other inanimate objects for the mitigation or prevention of disease in humans or animals in food processing plants and health care facilities.

b) disinfectant products to be used on medical devices or instruments, including contact lenses.

Notes:

- Antimicrobial products which are intended for use solely as sanitizers/cleaners do not require a Drug Identification Number (DIN) prior to being sold on the market.

- If product labelling does not meet the criteria established in this guide, applicants are referred to the Chemical Health Hazard Assessment Division, Bureau of Chemical Safety, Food Directorate (see section **5.4.6.3**).

II) **Ingredients:**

a) **Active Ingredient Categories:**

i) Iodophors
ii) Chlorine releasing compounds
iii) Quaternary ammonium compounds
iv) Anionic surfactants
v) Hydrogen peroxide, peracetic acid, acetic acid solutions

A list of acceptable single active ingredients for sanitizers/cleaners is provided in Table 5-7.

b) **Combinations of Active Ingredients:**

i) Combinations of any of the active ingredients from the same category are permitted.

c) **Nonactive Ingredients:**

Nonactive ingredients should be restricted to the substances that are necessary for the formulation. Their concentration should not exceed the minimum required to provide their intended effect. Their presence should not adversely affect the toxicity or safety of the active ingredient(s) and they should not interfere with assays and tests for the active ingredients. A list of acceptable nonactive ingredients for sanitizers/cleaners is provided in Table 5-8.

III) **Labelling:**

This section describes the requirements that are specific to sanitizing products.

a) **Unacceptable Claims:**

Statements such as non-toxic, non-irritant, safe, harmless, etc., are not considered appropriate for sanitizers/cleaners.

b) **Indications:**

All products should indicate **the following statements:**

i) for use in a food processing plant
ii) intended for use as a sanitizer/cleaner or equivalent
iii) rinse with potable water for food contact surfaces where required.[16]

c) **Directions for Use:**

i) For all products, complete directions for use as a sanitizer/cleaner for environmental surfaces should be specified, including:

- types of surfaces (e.g, floors, walls, countertops);
- specific instructions for the preparation of the in-use dilution in metric units of measure;
- mode of application;
- a contact time of 3 minutes if the product is to be rinsed off;
- avoid contamination of food.

ii) **In-use solution concentrations with no rinse necessary:**

1)	Iodophors	≤ 25 ppm
2)	Chlorine	≤ 200 ppm
3)	Quaternary ammonium compounds	≤ 200 ppm

4) Anionic surfactants:

- C10-C16 Alkyl benzene sulfonic acid ≤ 200 ppm

  and its sodium salts
- Sulfonated oleic acid, sodium salt ≤ 300 ppm

5) Hydrogen peroxide, peracetic acid, ≤ 1100 ppm H_2O_2
acetic acid solutions.

Nonactive ingredients as listed in Table 5-8.

iii) **In-use solution concentrations with rinse necessary:**

1) Iodophors > 25 ppm

2) Chlorine > 200 ppm

3) Quaternary ammonium compounds > 200 ppm

4) Anionic surfactants:

- C10-C16 Alkyl benzene sulfonic acid > 200 ppm

  and its sodium salts

- Sulfonated oleic acid, sodium salt > 300 ppm

5) Hydrogen peroxide, peracetic acid, > 1100 ppm H_2O_2
acetic acid solutions

Nonactive ingredients as listed in Table 5-8.

IV) **Warnings and First Aid Information:**

For all products, warnings, precautionary statements and first aid information should be appropriate to the hazard.

TABLE 5-7 Active Ingredients of Sanitizers / Cleaners

Category	Preferred name	Synonym
Quaternary ammonium compounds	Alkyl ethyl benzyl dimethyl ammonium chloride	
	Aralkonium chloride	Alkyl dimethyl-3, 4-dichlorobenzyl ammonium chloride
	Benzalkonium chloride	Alkyl dimethyl benzyl ammonium chloride
	Cetalkonium chloride	Cetyl dimethyl benzyl ammonium chloride
	Didecyl dimethyl ammonium chloride	Chloride didecyl dimethylammonium
	Dioctyl dimethyl ammonium chloride	Chloride dioctyl dimethylammonium
	Hexadecyl dimethyl benzyl ammonium chloride	Chloride hexadecyldimethylbenzyl ammonium
	Methyl dodecyl benzyl trimethyl ammonium chloride	Chloride methyl dodecyl benzyl trimethyl ammonium
	Octa decyl dimethyl benzyl ammonium chloride	Chloride octadecyl dimethylbenzyl ammonium
	Octyl decyl dimethyl ammonium chloride	Chloride octyl dimethyl ammonium
	Octyl dimethyl ammonium chloride	Chloride octyl dimethyl ammonium
Iodophors	Nonylphenoxy polyethoxyethanol iodine complex	Nonoxynol iodophor A-P-nonylphenyl-omega-hydroxypoly oxyethylene iodine complex
	Polyethoxy polypropoxy polyethoxy ethanol iodine complex	Iodine polyethoxy polypropoxy polyethoxy ethanol
Chlorine releasing compounds	Calcium hypochlorite	
	Sodium hypochlorite	
Anionic surfactants	C10-C16 Alkyl benzene sulfonic acid	
	Sodium C10-C16 alkyl benzene sulfonate	
	Sulfonated oleic acid, sodium salt	

Category	Preferred name	Synonym
Hydrogen peroxide, peracetic acid, acetic acid solutions	Hydrogen Peroxide	
	Peracetic acid	Peroxyacetic acid
	Acetic acid	

TABLE 5-8 Nonactive Ingredients* of Sanitizers / Cleaners

Preferred name	Synonym
citric acid	
ethoxylated alkyl phenols	
ethyl alcohol	ethanol
hydroiodic acid	
1-hydroxyethylidene-1,1-diphosphonic acid	HEDP
isopropyl alcohol	isopropanol
phosphoric acid	orthophosphoric acid
potassium carbonate	
potassium hydroxide	
propylene glycol	
propylene oxide and ethylene oxide, block copolymer	
sodium carbonate	
sodium hydroxide	
tetrasodium ethylene diaminetetraacetate	tetrasodium EDTA

* Use of these nonactive ingredients in sanitizers/cleaners must be considered to be in accordance with the criteria set forth under Item II, c) above.

6 REFERENCES:

1. ***Assessment of Efficacy of Antimicrobial Agents for Use on Environmental Surfaces and Medical Devices*** (CAN/CGSB: 2-161-97), Canadian General Standards Board, Minister of Public Works and Government Services, Ottawa, 1997.

2. Favero, M.S. and Bond W.W. (2001). Chemical Disinfection of Medical and Surgical Materials. In ***Disinfection, Sterilization and Preservation***, 5th Edition, S.S. Block (Ed), Lippincott, Williams and Wilkins, Philadelphia, pp. 881-917.

3. Infection Control Guidelines: Handwashing, Cleaning, Disinfection and Sterilization in Health Care, Health Canada, Ottawa, December 1998.

4. Infection Control Guidelines: Preventing the transmission of bloodborne pathogens in healthcare and public service settings. **Canada Communicable Disease Report**. 23S3: 1-31, Health Canada, Ottawa, May 1997.

5. Gerberding J.L. (1996). Prophylaxis for occupational exposure to HIV. **Annals of Internal Medicine**, 125:497-501.

6. De Carli G., Puro V. and Ippolito G. (2003). Risk of hepatitis C virus transmission following percutaneous exposure in healthcare workers. **Infection**, 31 (Suppl. 2):22-27.

7. Riddell L.A. and Sherrard J. (2000). Bloodborne virus infection: The occupational risks. **International Journal STD & AIDS**, 11:632-639.

8. Beltrami, E.M., Williams, I.T., Shapiro, C.N. and Chamberlan M.E. (2000). Risk and management of bloodborne infections in healthcare workers. **Clinical Microbiology Reviews**, 13:385-407.

9. Sattar S.A. and Springthorpe V.S. (2001). Methods of testing the virucidal activity of chemicals. In ***Disinfection, Sterilization and Preservation***, 5th Edition, S.S. Block (Ed), Lippincott, Williams and Wilkins, Philadelphia, pp. 1391-1412.

10. Guidance on the Content and Format of Pre-market Notification Submissions for Liquid Chemical Germicides, (1996). Food and Drugs Administration of the United States, Infection Control Devices Branch, Division Dental, Infection Control and General Hospital Devices, Office of Evaluation.

11. Premarket Notification Guidance Document for Contact Lens Care Products (1997). Food and Drugs Administration of the United States, Center for Devices and Radiological Health (CDRH).

12. Therapeutic Products Directorate Guidelines: Preparation of Drug Identification Number Submissions, Health Protection Branch, Health Canada, February 1995.

13. For information concerning Pest Control Product Registration and/or application requirements for 'sanitizer only' submissions subject to the *Pest Control Products Act*, inquiries should be directed to:

    Pest Management Regulatory Agency
    Health Canada
    2720 Riverside Drive
    Ottawa, Ontario
    K1A 0K9

    Tel: 1-800-267-6315
    Fax: (613) 736-3798
    WEB: www.hc-sc.gc.ca/pmra-arla/

14. For information concerning the acceptability of disinfectant products for use in registered food establishments, send a request for Non-Food Chemical Form (HER4031) by fax to:

    Canadian Food Inspection Agency
    59 Camelot Drive
    Nepean, Ontario
    K1A 0Y9

    Fax: (613) 228-6675
    WEB: www.cfia-acia.agr.ca

15. For products labelled for use as antiseptics (also classified and regulated as drugs) for use on:

    a) humans: inquiries should be directed to:

    NonPrescription Drug Evaluation Division
    Bureau of Gastroenterology, Infection and Viral Diseases
    Therapeutic Products Directorate
    Health Canada
    Finance Building, A.L. 0202A
    101 Tunney's Pasture Driveway
    Tunney's Pasture
    Ottawa, Ontario K1A 0K9

    Fax: (613) 946-9614

b) animals: inquiries should be directed to:

Veterinary Drugs Directorate
Health Canada
Holland Cross Complex
Ground Floor, 14-11 Holland Avenue
A.L. 3000A
Ottawa, Ontario K1A 0K9

Fax: (613) 957-3861

16. For chemicals and materials which come into contact with drinking water, inquiries should be directed to:

Water Quality and Health Bureau
Safe Environments Programme
A.L. 4903A
269 Laurier Avenue W.
Ottawa, Ontario K1A 0K9

Fax: (613) 952-2574

17. Regarding the Association of Official Analytical Chemists (AOAC International) Official Methods of Analysis, inquiries should be directed to:

AOAC International
Customer Service
481 North Frederick Avenue
Suite 500
Gaithersburg, MD
20877-2417 U.S.A.

Fax: (310) 924-7089

18. Regarding the efficacy test methods of the American Society for Testing and Materials (ASTM International), inquiries should be directed to:

ASTM International
100 Barr Harbor Drive
PO Box C700
West Conshohocken, PA
19428-2959 U.S.A.

Fax: (610) 832-9555