

Where do I start?

Standards for Pharmacy Compounding of Non-sterile Preparations



**COLLEGE OF
PHARMACISTS
OF MANITOBA**

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Step 1: Familiarize yourself with standards

Before the April 1, 2020 deadline for phase one of the Standards for Pharmacy Compounding of Non-sterile Preparations, please familiarize yourself to the model standards issued by NAPRA.

[Model Standards for Pharmacy Compounding of Non-sterile Preparations](#)
[Guidance Document for Pharmacy Compounding of Non-sterile Preparations](#)

See the College website for the Implementation Schedule and implementation resources. On this page, you'll find resources such as links to the NAPRA documents and the Quality Assurance Self Assessment, a useful gap analysis tool to help get you ready for non-sterile compounding.

Step 2: Designate a Compounding Supervisor

What is a compounding supervisor?

In every pharmacy, a non-sterile compounding supervisor must be designated. Among other things, it is the responsibility of this supervisor to consider the risk associated with all preparations compounded in the pharmacy.

The compounding supervisor must be a pharmacist or a pharmacy technician.

The responsibilities of a non-sterile compounding supervisor include (but not limited to):

1. Ensuring that compounding personnel are trained and competent to perform non-sterile compounding.
2. Ensuring policies and procedures around non-sterile compounding are in place and kept up to date.
3. Ensuring that risk assessment have been completed for all compounded products prepared at the pharmacy or facility.
4. Ensuring that a Master Formulation for each compounded product is developed.
5. Ensuring that the appropriate personal protective equipment is in place to ensure compounding personnel are protected and the compounded product is of high quality.
6. Ensuring the facilities meet the NAPRA standards for compounding non-sterile products.
7. Ensuring appropriate Beyond-Use-Dating (BUD) is used.

Please see **section 5.1.2** of the Guidance Document for Pharmacy Compounding of Non-Sterile Preparations for more information.

Step 3: Identify compounding currently being prepared

Should you be compounding this?

When presented with a prescription for a non-sterile compounded product, the compounding supervisor must determine whether the pharmacy has the facilities and/or expertise to compound the prescription.

As directed by the NAPRA model standards, the following questions should be considered before non-sterile compounding is undertaken:

Are the active ingredients already available in a manufactured product?

- Do you have a referenced formulation?
- Do you have the beyond-use date (BUD) and relevant stability data?
- Do you have a dedicated space for compounding that is clean and uncluttered?
- Do you have the appropriate equipment and ingredients to make the compounded preparation?
- Are your pharmacy personnel competent to perform compounding of the preparation?
- Can your pharmacy personnel compound the preparation without interruption?
- Should you refer this compounded preparation to another pharmacy with appropriate facilities, equipment and expertise?

After considering these questions and making a decision to prepare a non-sterile compounded product, a risk assessment must be completed in accordance with the NAPRA Model Standards for non-sterile compounding before the preparation is made.

Step 4: Complete Risk Assessments

What is a simple compound vs a moderate or complex compound?

The levels of complexities of non-sterile compounds are defined in the United States Pharmacopeia – National Formulary (USP-NF) General Chapter 795.

A **simple compound** can be defined as:

A preparation that has a USP compounding monograph or that appears in a peer reviewed journal article that contains specific quantities of all components, compounding procedure and equipment, and stability data for that formulation.

Please note that Health Canada's [Policy 51](#) says that the definition of compounding does not include mixing, reconstituting, or any other manipulation that is performed in accordance with the directions for use on an approved drug's labelling material.

A **moderate compound** can be defined as:

A preparation that requires special calculations or procedures to determine quantities of components per preparation or per individualized dosage units.

Or

Making a preparation for which stability data for that specific formulation are not available.

A **complex compound** can be defined as:

A preparation that requires special training, environment, facilities, equipment and procedure to ensure appropriate therapeutic outcomes.

How do simple, moderate and complex compounds fit into the NAPRA Model Standards Risk Levels?

The National Association of Pharmacy Regulatory Authorities (NAPRA) has categorized the compounds into three levels: Level A, B and C. The different risk levels specify the requirements for facilities, equipment and personal protective equipment.

One of the first steps in assessing the risk associated with compounding a non-sterile preparation is identifying the complexity of the compound, using the definitions found in USP-NF General Chapter 795. Pharmacists must complete a risk assessment for all compounded products to determine what risk Level the product is found in and whether it is appropriate to compound that product within the existing facilities.

Simple and moderate compounds are generally included in Level A compounding.

Complex compounds are generally included in Level B compounding.

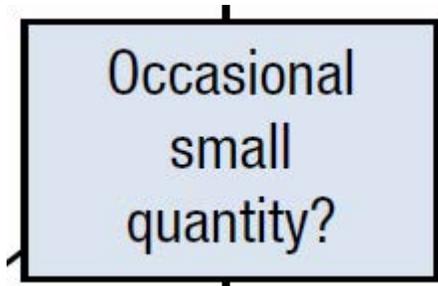
How do I complete a risk assessment?

For all products compounded in the pharmacy, compounding personnel must complete a risk assessment to identify the level of requirements needed to compound the product.

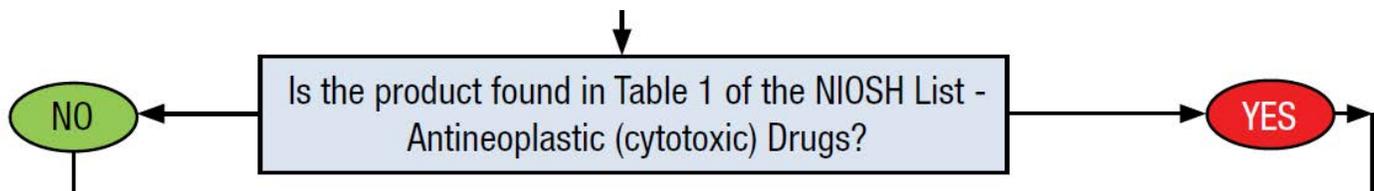
The decision [algorithm for risk assessment](#) can be found in section 4.2 of the NAPRA guidance document.

Step 1: Determine exactly what products are used to compound the product. Ensure you have the references for each product (Safety Data Sheets (SDSs), National Institute for Occupational Safety and Health (NIOSH) list, Workplace Hazardous Material Information (WHMIS) data)

Step 2: Determine what quantity of the compound will be made. Risk is determined not just from the qualities of the products being compounded, but also by the cumulative risk of exposure experienced while compounding the product. This step will help to determine whether the compound is done as an “occasional small quantity”.



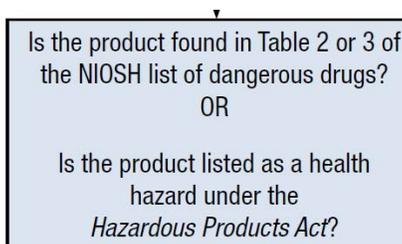
Step 3: Consult the NIOSH [list](#) and determine whether any of the products used in the compound are found in Table 1 of the NIOSH list. Please remember that a compound containing products found in Table 1 of NIOSH list must never be compounded in Level A.



Step 4: If the product is found in Table 1 of the NIOSH list, the algorithm will require that the compounder determine whether the compound is an occasional small quantity and what precautions are needed to protect the compounding personnel and the patient.

If the product is not found in Table 1 of the NIOSH list, progression through the algorithm requires further information to be gathered.

- Determine if the products are on Table 2 or 3 of the NIOSH list.
- Determine if the products are listed as a health hazard by referencing the Safety Data Sheets.



- Determine if the products used in the compound require ventilation, using the Safety Data Sheets as a reference.
- Determine if the products used in the compound pose a reproductive risk, using the Safety Data Sheets as a reference.

Does the NIOSH or WHMIS information indicate that this material requires ventilation for preparation?

Or is it a reproductive risk to compounder?

- Determine what, if any personal protective equipment is required, using the Safety Data Sheets as a reference. Examples of greater precautions to protect personnel can include, but are not limited to eye protection, a mask and gloves.

Do these ingredients require greater precautions to protect patient or personnel?

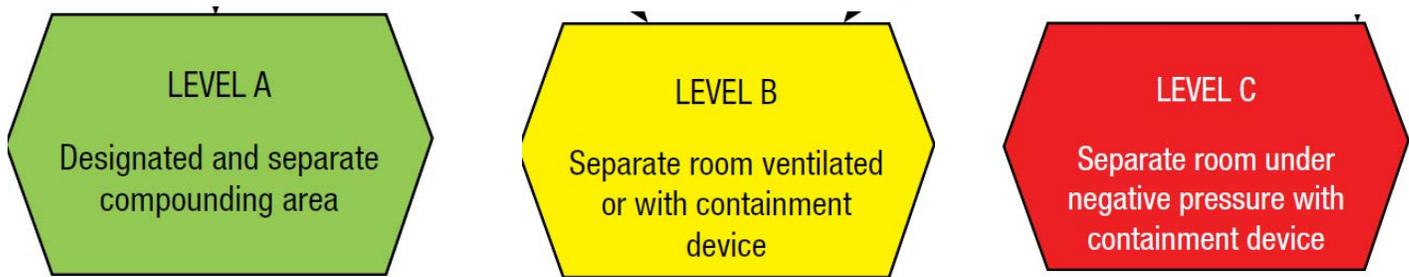
Step 5: Determine the product's level of complexity. For more information, review the section on complexity.

Is the compound simple/moderate or complex?

Some factors to consider in risk assessment from section 4.1 of the NAPRA Model Standards:

- Complexity of compounding the preparation
- Need for verification and uninterrupted workflow
- Frequency of compounding high-risk or low-risk preparations
- Risk of cross-contamination with other products (e.g., allergens)
- Concentration of ingredients in the product
- Quantity of ingredients being handled
- Physical characteristics of ingredients, such as liquid vs. solid vs. powders, or water-soluble vs. lipid-soluble
- Education and competency of compounding personnel
- Availability of appropriate facilities and equipment
- Classification of ingredients if identified by WHMIS (SDS) as presenting a health hazard or a drug classified by NIOSH as hazardous
- Type of hazardous drug (i.e., anti-neoplastic, non-antineoplastic, reproductive risk only)
- Exposure to compounding personnel for each preparation and accumulation of exposure over time
- Risk of microbial contamination (liquids, creams and ointments may be particularly susceptible to microbial and other contamination)

Step 6: Having gathered the information about the products that make up the non-sterile compound, the compounding personnel can follow the algorithm to the appropriate Risk Level.



It is important to document the information gathered to support the Risk Level that the compound is assigned. The risk assessment must be reviewed every 12 months to ensure it is still valid.

References for assessing risk

The following are important references compounding personnel must be familiar with when completing the Decision Algorithm for Risk Assessment.

National Institute for Occupational Safety and Health (NIOSH).

[NIOSH list of antineoplastic and other hazardous drugs in healthcare settings; 2016.](#)

- The NIOSH list is made up of three tables.
 - Drugs on table 1 of the NIOSH list are considered to be hazardous drugs. Many of the drugs on the table are cytotoxic and many have reproductive toxicities. Drugs that are found on table 2 or 3 of the NIOSH list are also considered to be hazardous and may have reproductive toxicities.
- Regardless of which NIOSH table the drug is found on, cutting, crushing and manipulating a solid dosage form of a drug will increase the exposure of the drug to the compounding personnel and pose a greater risk of exposure to hazardous drug.
- The NIOSH lists contain the criteria and sources of information for determining whether a drug is hazardous, given its genotoxicity, carcinogenicity, reproductive and developmental effects, and organ toxicity. The NIOSH lists can be used by pharmacies to complete the decision algorithm for risk assessment.
- Determining whether a product is found on one of the tables of the NIOSH list is the first step in completing the decision algorithm for risk assessment.

[Hazardous Products Act and Hazardous Products Regulation.](#)

- The Hazardous Products Act (HPA) is included under federal Workplace Hazardous Materials Information System (WHMIS) legislation. The Hazardous Products Act (HPA) requires suppliers who sell hazardous products intended for use, handling or storage in a workplace in Canada to provide a label and safety data sheet (SDS) to the purchaser of the product.

- The Hazardous Products Act refers to Safety Data sheets for hazardous products.

Safety Data Sheets (SDSs, formerly Material Safety Data Sheets)

- A Safety Data Sheet (SDS) is defined as a document that contains information about a hazardous product, including information related to the health hazards associated with any use, handling or storage of the hazardous product in a work place.
- Safety Data Sheets are referenced in the Hazardous Products Act. The safety data sheets will tell you what the potential health hazards are regarding the product and what personal protective equipment is required for safe handling of the product. Safety Data Sheets are very important tools in determining the risk level of the compound.

Workplace Hazardous Materials Information System (WHMIS)

- WHMIS is federal legislation which provides information on the safe use and handling of hazardous materials.
- The three components of WHMIS are:
 - Product Labels
 - Safety data sheets (SDS)
 - Worker education programs

United States Pharmacopeia (USP):

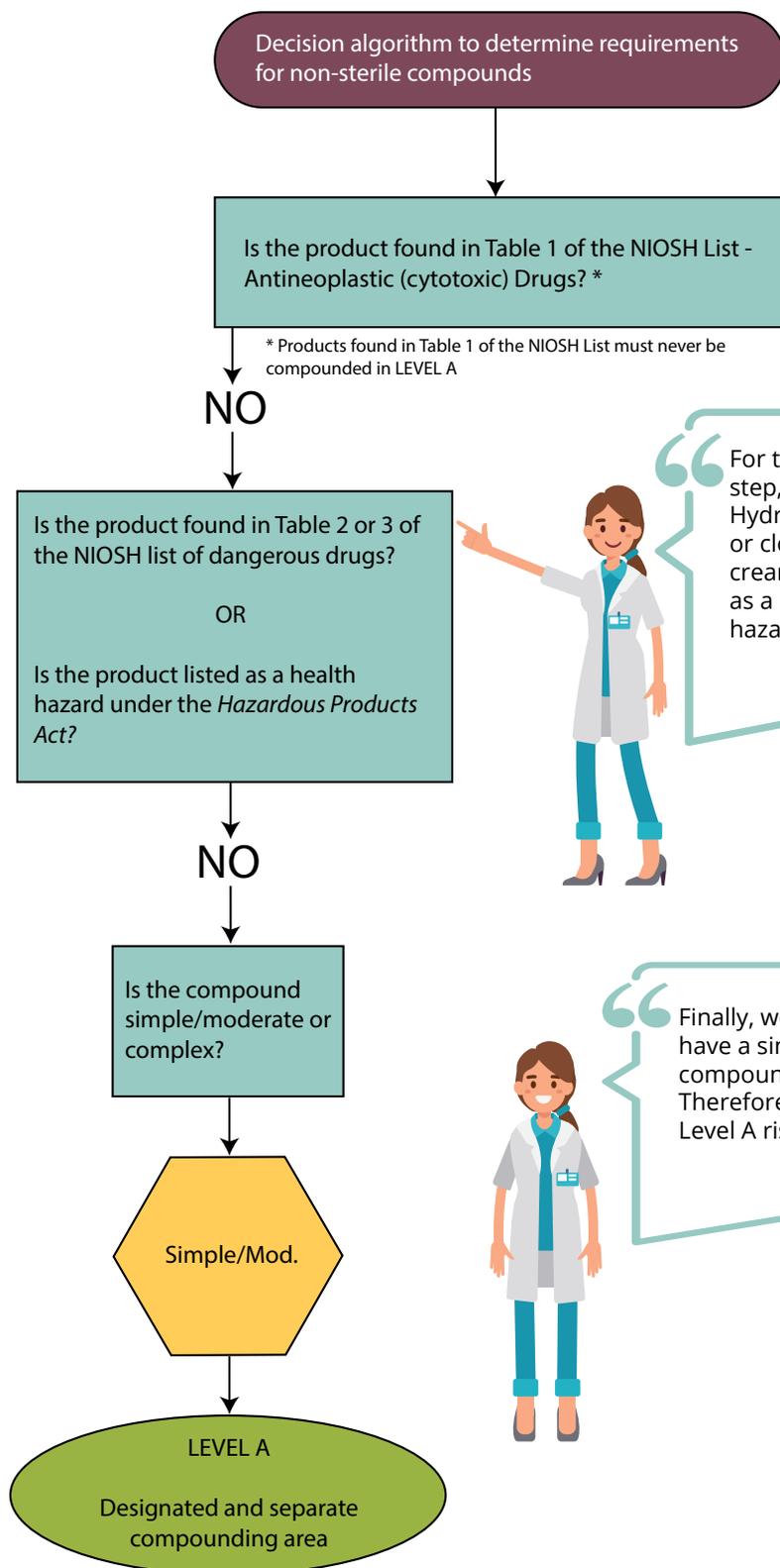
- USP <795> refers to the general chapter <795> of the United States Pharmacopeia. "USP develops standards for compounding non sterile medications to ensure patient benefit and reduce risks such as contamination, infection or incorrect dosing. USP General Chapter <795> provides standards for compounding quality nonsterile preparations".
- USP<800> refers to the general chapter <800> of the United States Pharmacopeia. USP <800> provides standards for compounding and handling hazardous drugs.
- USP<795> and <800> is an important reference used when determining the level of complexity of a compound which will help the compounder determine the appropriate level of risk. For more information, see section titled: Risk levels and complexity of non-sterile compounds.

[NAPRA Model Standards for Pharmacy Compounding of Non-sterile Preparations NAPRA](#)

[Guidance Document for Pharmacy Compounding of Non-sterile Preparations](#)

Decision Algorithm for Risk Assessment - Level A

Hydrocortisone cream / Clotrimazole cream



“ Neither Hydrocortisone or clotrimazole cream are found on the NIOSH list ”



“ For the next step, neither Hydrocortisone or clotrimazole cream are listed as a health hazard ”

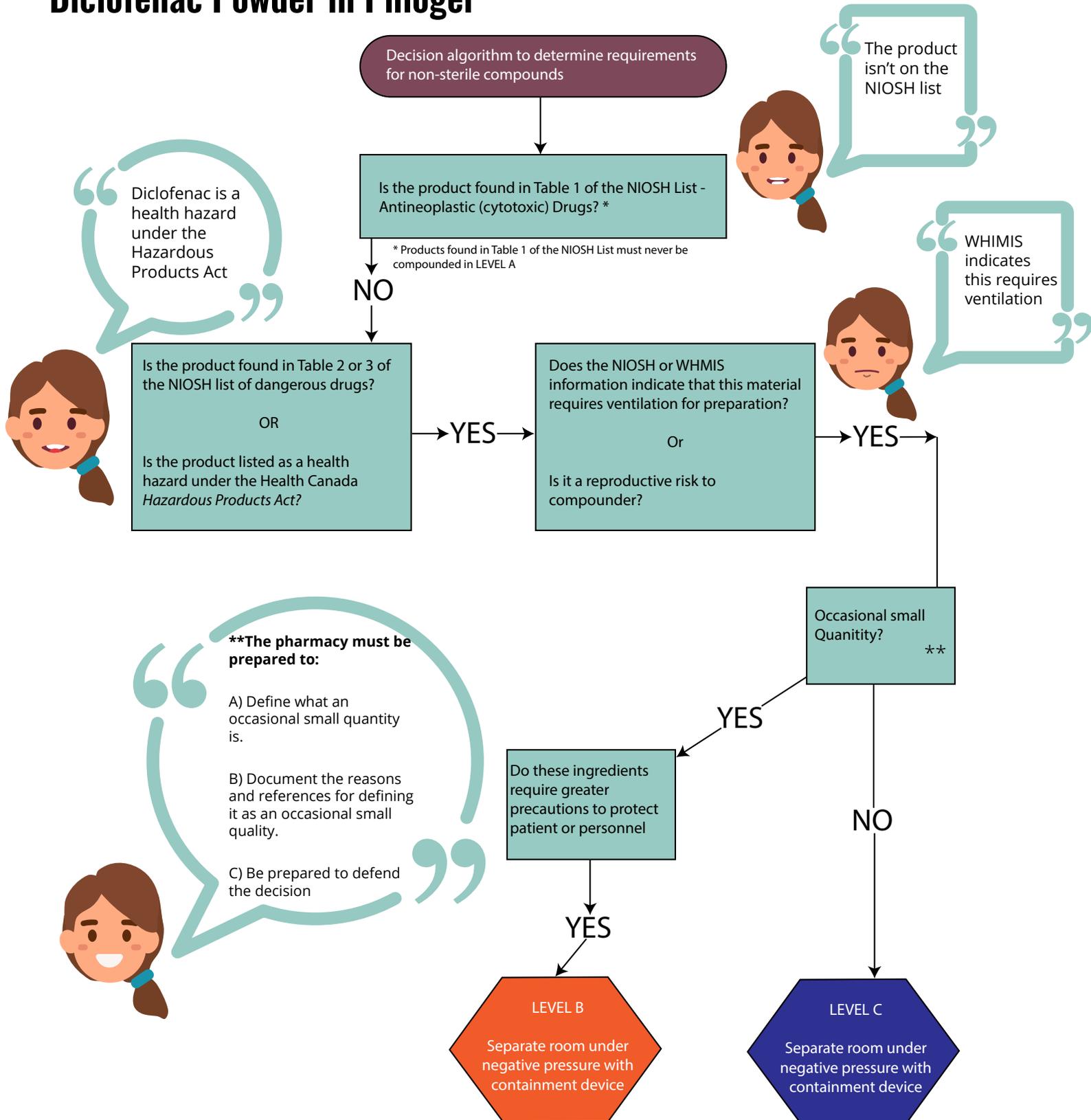


“ Finally, we have a simple compound. Therefore, it is Level A risk. ”



Decision Algorithm for Risk Assessment - Level B or C

Diclofenac Powder in Phlogel



Step 5: Facilities

Facilities for Non-sterile compounding

If a pharmacy or healthcare facility prepares non-sterile preparations, the area reserved for this purpose must be a dedicated, separate space. There is no minimum size requirement for the designated compounding area. It must be large enough for compounding personnel to work safely and comfortably.

The compounding area should not be located in an area of high traffic in order to prevent cross contamination.

Whether Level A, B or C is being compounded, the space must be:

- Designed and arranged in such a way as to prevent contamination of compounded product with dust and dirt.
- Large enough for compounding personnel to work comfortably and safely.
- Large enough to store equipment and products
- Free of packaging and cardboard boxes from the products
- Able to be cleaned.
- Maintained in a good state of repair
- Well lit.

Other considerations for the compounding space:

- Air vents should not be located directly over work areas, to avoid contaminating the products.
- A clean water supply (hot and cold running water) must be available or close to the compounding area, depending on the Level. (Level B and C require the sink in the room)
- Work surfaces (i.e. countertops) should be made of smooth, impervious and non-porous materials.
- The work surface must be able to withstand repeated cleaning and disinfecting.
- The overall areas for non-sterile compounding should be kept clean.
- All components, equipment and containers must be stored off the floor (i.e. the scale must not be stored on the floor).

Level A Facilities

Requirements include a separate compounding area. The area must be a designated area dedicated only to non-sterile compounding.

A sink with hot and cold running water must be available near the Level A compounding area.

Level B Facilities

Requirements include a dedicated room that is separate from the rest of the pharmacy. The room must be a ventilated, entirely closed off room. A ventilated containment device could be used when certain powders, aromatic products or hazardous products are compounded.

A sink with hot and cold running water must be available in the Level B room.

Level C Facilities

Requirements include a room under negative pressure and a ventilated containment device. **The room for compounding Level C compounds must be externally vented with at least 12 air changes per hour (ACPH).**

A sink with hot and cold running water must be available in the Level C room.



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