

User Guide

Summary of Needs (Design/renovation of laboratories)

Part 1. CPS review

The Controlled Products Standard (CPS) is currently under review. As an interim measure the Requisitioner's Declaration has been revised and renamed. It will now be called the Summary of Needs (SN).

The interim use of this document allows revision and comment before the SN is proposed for adoption as part of a University procedure. Your comments and feedback are welcomed and should be directed to Joey Bellino 204-474-6970.

The SN will be specific to a use. The first SN developed applies only to laboratories. Other SN's will follow for store rooms and studios/workshops. Until they are available please use the existing Requisitioner's Declaration.

Significant changes in the SN form and process

- Partial laboratory renovations will not necessarily invoke all CPS requirements
- EHSO will actively assist requisitioners in completing the SN
- The SN is a Word document that you can complete electronically
- The SN is accompanied by this user guide to assist requisitioners in understanding the basis for questions in the SN.

Part 2. General background

This guide provides background information to assist requisitioners in completing the SN. The SN is intended to give designers and the University enough information to ensure that a new or renovated space meets your needs when completed and is compliant with all regulatory and funder requirements.

This user guide provides some general background information about the design/renovation process for laboratories and also provides specific background information for the questions that appear in the SN form.

The guide does not contain comments about every question on the SN form, only those where the significance of a question may not be obvious. Feedback is welcome on additions to the

EHSO staff will be available to assist requisitioners in completing the SN. This should speed the process and ensure that designers receive the information that they require.

Hazardous materials versus controlled products

“Controlled product” has a very specific definition under Federal and Provincial legislation that would not include all substances meant to be covered by the CPS, eg. radioisotopes. Part of the CPS revision will be to stop using the term “controlled product” and switch to the more generic term “hazardous product”

Definition - Laboratories

“Laboratory” is a general term used to describe a variety of spaces. This SN only targets laboratories that meet this definition:

A space used for scientific research, experimentation or teaching that involves the use of hazardous materials.

Completion of SN based on best knowledge at the time of completion

The SN should be completed based on what you know at the time that you complete it, eg. you may need to provide estimates for the quantities of various materials that will be used in the space. Generally questions will ask this estimate to be based on the maximum quantity likely to be kept in the space on any given day. This quantity will likely overestimate what is actually present on any given day but will provide some margin of safety in the design.

Compliance to applicable Federal, Provincial and Municipal standards

All University laboratories must comply with standards such as the National Building Code of Canada and the National Fire Code of Canada. These documents reference other standards and guidelines that must also be incorporated into design/renovations.

Versatile laboratory spaces

The University has elected to build all new labs or renovate existing laboratories to be compliant with the requirements for:

- a “Containment Level 2” laboratory as described in the Public Health Agency of Canada “Laboratory Biosafety Guidelines”
- a “basic level” laboratory as described in the Canadian Nuclear Safety Commission GD-52: Design Guide for Nuclear Substance Laboratories and Nuclear Medicine Rooms

The intention is to develop laboratories that are versatile to match changing needs over time.

Basic laboratory requirements

The various standards create default requirements for laboratories that are not discussed in the SN. Some will have additional costs associated with them. Here are some examples of measures that will automatically be incorporated into any laboratory design:

- provisions to post any required signage
- access to emergency showers
- seamless flooring
- 3.0 square metres of free floor space per occupant
- 1 cubic foot per minute of exhaust per square foot of floor space
- chemical resistant countertops
- telephone or alternate emergency communication
- space for storage of personal items outside a laboratory
- food preparation/storage areas are excluded from a laboratory
- study desks are excluded from laboratories
- offices associated with a laboratory must have separate access to hallways, ie. sole access cannot be through the laboratory
- emergency lighting
- requirements for more than one exit
- provisions for separate hand-washing and lab ware sinks

The criteria that a designer will use for new construction or renovations appear in the Designer Declaration documents contained in CPS Part A

Part 3 Details for specific SN items

Note that the SN is a Word document. You can simply open the document and fill it in electronically.

Section 1. External design approval required.

There are several instances where the University requires external approvals before a design can be approved and built. These are listed in Section 1 of the SN.

If you answered “yes” to any of the questions in this section you should still complete the remainder of the SN and submit it. Physical Plant will arrange a meeting to discuss the proposed project before proceeding.

Section 2. General

2.1 Please provide a description of the renovation/construction work to be carried out in the room and the planned use of the space. If the space is shared please indicate any other activities and processes may take place.

This section is new and is intended to help everyone involved in the design/renovation process to understand the scope of the project, eg. are you refurbishing counter-tops or completely renovating the space. This information was missing from the old Requisitioner’s Declaration and made it very difficult to assess proposed designs

EHSO will use this information to assess the extent of the application of CPS requirements. For example, if the only renovation is the replacement of counter-tops, the full requirements of the CPS would not be applied. The new counter-tops would have to comply with CPS requirements but the counter-top replacement would not automatically force the upgrade of an entire laboratory based on a single improvement.

2.4 Will students/staff require desks or study areas (must be outside the laboratory). If yes how many will be required?

Student study areas cannot be located in the laboratory itself. It is acceptable to create a work station for data acquisition and entry in the laboratory but that should be the sole purpose of the station.

2.5 Please indicate the maximum number of people likely to be present in the space under normal operating conditions

Designers are required to provide 3.0 square metres of free floor space per occupant based on a Canadian Nuclear Safety Commission recommendation for laboratories.

Section 3. Chemical agents

Designing a laboratory that allows proper storage of chemicals is challenging. Section 3 tries to provide designers with the basic information that they require to be successful. The section focuses on chemicals that pose particular concerns, eg. compressed gases, incompatibles, etc.

Unfortunately volumes of chemicals kept in a laboratory will influence the laboratory's design. To make the task less onerous for requisitioners any questions asking for volumes will ignore small quantities of a chemical. For example, 5 grams of sodium metal (water-reactive) would not be included in any list but 1 kilogram would be listed. At this time the limits for reporting are arbitrary and may be adjusted as we gain experience with the new SN form.

3.1a&b Will any compressed gas cylinders be used in the space (or stored)? If so, please list the gases used, cylinder size, and the number of cylinders. Please include the TDG Classification for each cylinder (it will appear on a label affixed to the cylinder)

The Fire Code makes a distinction between "in use" cylinders and cylinders being stored. An "in use" cylinder is one that is connected to analytical or other equipment through piping, hose, etc. "In use" cylinders need to be secured and protected.

There are significant steps required to store gas cylinders indoors, eg. a cylinder storage cabinet will have to be situated on an exterior wall and vented to the outside. If you intend to store gas cylinders indoors this will be a very significant cost and the rooms location may not even allow it.

3.2 Will flammable/combustible liquids be kept in the space during use? If so, please list the flammable/combustible liquids that be kept in the laboratory on a regular basis and estimate the maximum quantity likely to be present on any given day. This list should be restricted to flammable/combustible liquids present in quantities over 1 litre.

This question allows the designer to assess whether a flammable storage cabinet needs to be incorporated into the design of a laboratory based on the requirements of the Manitoba Fire Code. It will be required if there are over 300 litres total of flammable/combustible liquids or if there are over 50 litres of "class 1 " flammable liquids.

Appendix "D" of the current CPS Part B

[http://umanitoba.ca/admin/vp_external/erob/media/D_Flam_Chem_Storage_CPS_Part_B_1997 .pdf](http://umanitoba.ca/admin/vp_external/erob/media/D_Flam_Chem_Storage_CPS_Part_B_1997.pdf) provides definitions of the classes but also provides a list of commonly encountered flammable/combustible liquids. If there is any doubt about whether something needs to be included please contact EHSO for assistance.

This question simplifies the process by only asking for a list of flammable/combustible liquids present in quantities over 1 litre. For example, 4 litres of methanol would be reported while 500 ml of acetaldehyde would not.

3.10 Are there any other chemicals that will be used in this space that create special concerns, eg. dangerously reactive substances. If yes please list materials and maximum quantities expected to be present on any given day. The list should be restricted to materials present in quantities over 1 litre or 1 kilogram.

The questions in Section 3 are not exhaustive in terms of the all the hazardous materials that could be present in a laboratory. This question allows the requisitioner to note any hazardous materials that may not have been captured by the previous questions.

Note that Sections 4 and 5 address biological materials and radioisotopes specifically.

Section 4. Biological materials

*4.1 Will biological materials (microorganisms; human and animal blood, tissues and organs; recombinant DNA work; cell cultures) be used? If so please list the materials, where applicable list genus and species.
If no, proceed to section 5.*

This information should be readily available from your Biosafety Permit/Certificate of Approval required for any laboratory using biological materials.

Section 5. Radioactive materials

*5.1 Will radioactive material be used or stored in the laboratory? If yes list the isotopes, quantities, maximum activity and whether each is an open or encapsulated source.
If no skip the remainder of section 5.*

This information should be readily available as part of your Internal Permit.