Ref: SPMS/SOP/13.1	Date of issue: 21 June 2021	Next review date: 20 June 2024
Title:	SOP on Chemical Purchasing and Inventory Control	
Audience:	All NTU Staff and Students who are users of SPMS laboratories	

1. Scope

This document defines the process to ensure that all chemicals used in SPMS are tracked and controlled according to the requirements stipulated.

2. Definitions

ARIBA system is NTU's e-procurement system.

CBC Chemical Store is the one-stop receiving store for all incoming chemicals and lab consumables delivered to SPMS.

CBC Store Administrator refers to the store personnel who oversees the CBC chemical store.

NSS Procurement refers to NTU Shared Services Procurement Office who administers the procurement process.

SPMS Online Chemical Inventory System (OCIS) is an online system which users can order common chemicals from the CBC store.

Safety Data Sheet (SDS) is a document that provides information on the properties of hazardous chemicals and how they affect health and safety in the workplace.

Verifier in this document refers to the appointed person-in-charge of verifying if a chemical is regulated and need a license/permit to possess or handle prior to purchase or bring in.

3. References

a. SS 506: Part 1 2009 – Occupational safety and health (OSH) management systems, Part 1: Requirements

b. SPMS OSHMS Manual

4. Roles and Responsibilities

4.1 Principle Investigator (PI)

a. to ensure that his/her staff and students inventorize the chemicals purchased for the group and also regularly update the movement of the chemicals in the group's tracking sheet;

4.2 Requestor shall

a. ensure controlled items are marked as controlled items for verification in ARIBA system;

b. check to make sure they are not exceeding the MAQ set for their lab before purchasing the chemicals;

c. ensure the school has the necessary licenses to purchase the chemical by checking with SPMS Safety.

d. Update the SDS received (for hard copy) or download the SDS (for soft copy from the supplier) and communicate in his/her group.

4.3 Verifier shall

a. check the chemical request put up to ARIBA system for license requirement, availability and limit prior to the release of order;

b. release the order if the necessary license is available and within licensing limits;

c. hold the order if the license is not available, notify requestor and SPMS Safety to process the required license/permit.

5. Procedure

5.1 Request of Common Chemicals/Gases

a. The CBC store administrator shall maintain the accounts of the PIs in the system.

b. SPMS staff may request for common chemicals/gases from the CBC Chemical Store via the SPMS Online Chemical system (OCIS), the request will be chargeable from respective PIs' research fund.

c. The system will send an email to the respective PI for approval.

d. Once approved, the requestor shall print the order form and bring to the CBC chemical store for collection.

e. The CBC store administrator shall check the form against the system for approval and release the chemicals.

f. The CBC store administrator shall generate the monthly invoices for the PIs and send to them for approval.

g. Once approved, the CBC store administrator shall send the invoice to SPMS Finance

5.2 Chemical purchase via NSS Procurement System (Ariba)

a. SPMS staff may search the online catalogue for the chemicals they wish to purchase or request for a quotation through external vendors for their chemicals.

b. The purchase request shall be put up via the ARIBA system.

c. If the chemical being purchased is a controlled item, the requestor shall indicate that it is a "Controlled item" and the request will be routed to the Verifier for license and quantity verification. (note: user can check from the SPMS website for the list of regulated chemicals deemed as "Controlled item")

d. If the required license is available and within quantity limits, the purchase will be released for processing to the vendor.

e. If the required license is not available, the verifier will inform the requestor and the purchase will be put on hold until a license is obtained.

f. The Purchase Order will be issued by the NSS Procurement Team.

g. All chemicals purchased shall be delivered to CBC Chemical Store for receiving except for Laboratories located in PAP.

h. The requestor will be notified by email for chemical collection at CBC Chemical Store.

i. SDS will be provided by the vendor; store admin shall pass the SDS to the requestor together with the chemicals upon collection. Where the SDS is a soft copy from the supplier, the store admin is to inform the requestor to download such copy from the supplier's website and communicate to the other chemical users in his/her group.

5.3 Other Chemical Requisition

a. Incoming chemicals NOT from acquisition through purchasing route, such as chemicals transferred from other schools and samples from collaborators or vendors, shall be with the SPMS Safety Officers for required licenses before being brought in.

b. If the license is not available, the chemical cannot be brought in to SPMS until the license is obtained.

c. If the required license is available and within license limits, the chemicals shall be updated into the group's inventory list.

d. A risk assessment is to be conducted if transferring chemicals from other School to SPMS by the requestor. This is to ensure safe transporting of chemicals.

5.4 Chemical inventory

a. All groups are required to keep an inventory of the chemicals in possession.

b. This inventory should indicate at minimum the chemical name, quantity and be categorized into Petroleum & Flammable Materials (PFM), Hazardous Substances (HS), Explosive Precursors (EP) or Chemical Weapons Convention (CWC).

c. The inventory list shall be updated whenever a chemical is added, used up or disposed of with the exception of daily-use chemicals (i.e. chemicals that are bought and used up within a week do not need to be added and taken off the inventory list).

d. SPMS Safety Committee shall request the declaration of the inventory semi-annually or when there is a critical need or request from the various governing authorities.

5.5 Disposal of Chemical

a. Use only clean (non-contaminated) carboy for the collection of waste.

b. All used chemical bottles and chemical waste shall be disposed of through licensed Toxic Industrial Waste (TIW) Collector.

c. All personnel handling any waste should be don with PPE (chemical resistant gloves, safety glasses and lab coat)

d. Lab users disposing the chemical wastes from their lab are to check the condition of the carboy and tightened the cap before lifting onto the trolley to prevent the waste from splashing out during transporting to the waste store.

e. Minimise movement such as drastic shaking of the content of the waste carboy during the lifting and transporting of waste.

f. The generated waste shall be segregated and stored in waste carboys and labeled with an appropriate waste label, properly sealed/closed and not more than 80% filled. The waste carboys and labels can be collected from the CBC Chemical Store. Some examples of the common waste labels are shown in Appendix 1.

g. All used empty chemical bottles and chemical waste shall be sent to the CBC Chemical Store waiting for TIW collector for collection.

h. For waste cylinders, a quotation should be sought from the TIW collector and disposal arranged by the lab user.

i. Acid/Akaline waste should be handled properly and neutralized by the lab users in advance before sending it to CBC store.

j. The group's inventory list shall be updated prior to transferring the empty chemical bottles to the CBC Chemical Store as shown in Appendix 2.

k. Proper procedures for transporting chemicals shall be adopted when transferring the chemicals to the CBC Chemical Store.

l. **NO** waste is to be left unattended outside the CBC Store.

m. CBC Store has the right to reject the waste due to any infringements.

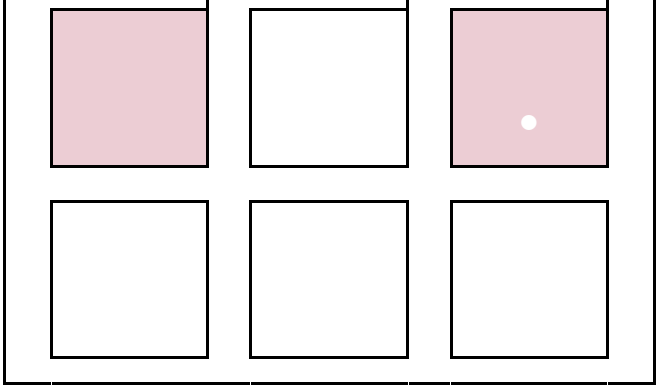
n. All hazardous waste disposed from the School shall be tracked and documented, inclusive of the consignment notes and NEA's e-tracking system fulfillment.

6. Records

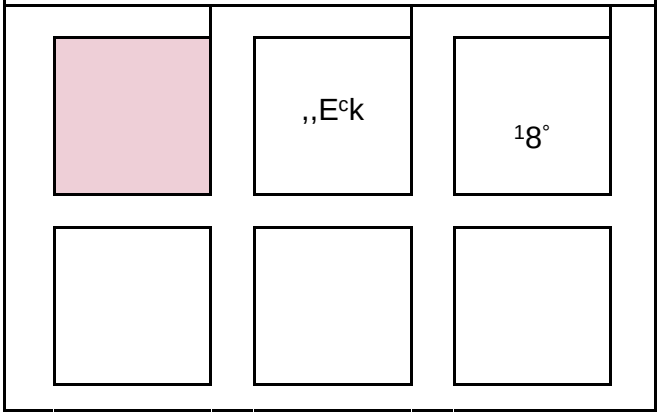
All records related to this SOP shall keep as per the SOP on Control of Records.

APPENDIX 1: Examples of Waste labels

NTU SPMS	Liquid Chemical Waste - Non-Halogenated Waste
PI Name:	
Location:	



NTU SPMS	Liquid Chemical Waste - Halogenated Waste
PI Name:	
Location:	



APPENDIX 2: Examples of Chemical Inventory Declaration Form

PFM			
PFM - Petroleum		Litres	
PFM - Solids		Kg	
PFM - Liquids		Litres	
PFM - Gas		m^3	
Chemical Name	**PSLG**	**Amount**	**Store Location**
benzyl cyanide	L	250ml	04-xx
tetrabutyl ammonium cyanide	L	5ml	04-xx
sodium cyanide	S	25g	04-xx
zinc cyanide	S	500g	04-xx
copper(I) cyanide	S	250g	04-xx
Iron(III) chloride	S	100g	04-xx
trifluoroacetemide	L	50ml	04-xx
Formaldehyde	L	1L	04-xx
Formic acid	L	500ml	04-xx
Hydrazine hydrate	L	100ml	04-xx
Hydrazine solution 35%	L	600ml	04-xx
Hydrochloric acid 35%	L	4L	04-xx

Hazardous Substances - Annex 1		
*refer to the regulated chemcial list, write down name and quantity		
E.g. 1,2-dibromoethane		L
E.g. Acetic Anhydride		L
E.g. Ammonia (Anhydrous)		Kg
Chemical Name	**Amount**	**Store Location**
1,2-dibromoethane	0.5L	04-xx
Hydrochloric Acid 37%	2L	04-xx

Version History

This Table below reflects the summary of changes made to the document. The full change information is indicated with yellow highlight in the document content.

Revision	Section	Summary of changes	Document Author	Effective Date	Approved
13.0	N/A	Initial Release	Vijitha Peiris	30-May-2019	Assoc. Prof. Rei Kinjo
13.1	4	Added section on Roles & Responsibilities	Lee Hong Yen	21 June 2021	Dr Ken Lee
	5	Changes to some of the procedures			
	Appendix 2	Updated chemical inventory declaration form			