

Safety Engineering & Technical Services Pty Ltd

OCCUPATIONAL HEALTH, SAFETY & ENGINEERING CONSULTANTS

ABN: 90 003 112 945



16 May 2010

The Manager
Capital Insight Pty Ltd
77 Berry Street
NORTH SYDNEY NSW 2060

Attention: Mr Michael Jenkin

Dear Sir

re: Dangerous Goods & Hazardous Substances – Contribution to Environmental Assessment Report Addressing the Director General's Environmental Assessment Requirements for the Proposed Ingham Health Research Institute (IHRI) Research Building at Liverpool Hospital

Pursuant to your request to contribute to the written submission for planning approval for the proposed Ingham Health Research Institute (IHRI) research building at the Liverpool Hospital campus, I advise as follows.

Scope of this advice

This advice addresses the following matters set out in the Director General's Environment Assessment Requirements (DGEARs) that are relevant to the storage, handling, use and disposal of dangerous goods and hazardous substances at the proposed IHRI Research Institute facility:

- the applicability of *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*, and on any implications arising from that policy for the approval process and/or the facility design and operations
- a description of the proposed storage, use and management of any hazardous materials
- a description of the likely waste streams containing dangerous goods and hazardous substances to be generated during demolition, construction and operation; and describe the measures to be implemented to minimise, reuse, recycle and safely dispose of this waste; and describe the measures to be implemented to manage the disposal of hazardous and/or contaminated waste, and .
- a description of the operational management systems for controlling radiation, chemical and biological hazards, wastes, including any specific emergency and evacuation procedures; fire fighting, and lighting and signage.

A description of the IHRI facilities relevant to this report

The proposed IHRI building project involves the design and construction of a five storey purpose built research facility that is comprised of a mixture of laboratory and non-laboratory space.

Building links are to be provided to conjoin the IHRI building to an adjacent precinct that has been refurbished as a wet research laboratory - the Health Services Building (HSB). There is also a long term possibility that the IHRI will be linked by an air bridge to a research linear accelerator (integrated within the Cancer Therapy Centre), and a Clinical Skills Centre.

Dry Laboratories accommodating research groups engaged in desk-based, the researchers engaging in clinical, population health and health services research are to occupy level 2 and 3 of the IHRI Building with space to be provided for the Clinical Trials Cooperative on level 1.

Wet laboratory facilities for undertaking in both basic and translational biomedical research with a particular focus on cancer, inflammation, and pancreatic disease will initially occupy level 4 of the building to accommodate up to 40 researchers and comprise three discrete functional zones: **laboratory space**, **laboratory support space** and **laboratory office space**.

Levels 3 have been designed to allow adaptation for wet laboratory use in the future, and a shell space is to be provided on level 5 that could be also developed as a wet laboratory in the future (the total space that could be provided for wet laboratory usage on these 2 levels is capable of accommodating up to an additional 65 researchers).

The wet laboratory areas are configured to meet the requirements for a Physical Containment Level 2 (PC2) facility.

Shared wet lab core facilities provided elsewhere in the building include:

- the **Biological Resources Unit (BRU)** – located in the Basement Level, housing small animal models (up to 1,000 mice and 150 rats) in a PC2 environment with facilities for holding, procedures, behavioural studies and imaging.
- **Tissue Banking and DNA Storage** – located on Level 1, being a TGA complying facility for the storage of tissue and DNA material including the existing Colorectal Cancer Tissue Bank currently located at the Garvan Institute, including a processing area and -80°C freezers and vapour phase cryogenic liquid storage vessels, adjacent to a bulk liquid nitrogen vessel
- a central **Wash-up and Autoclaving facility** – located on the Basement Level configured to support a one way work flow that commences with a “dirty” entry and receiving area, with waste materials proceeding via cleaning,

decontamination and drying stages, then into a sorting and packing, sterilisation and cooling , to finish in a sterile storage, distribution and exit area..

I am advised that, in summary, the usage of the various floors will be:

- Basement Level – Building services, shared facilities (such as storage, communications centre, flammable liquid storage and decanting, archives, waste pre-treatment and holding areas), and a large biological research unit where behavioural and clinical research studies are conducted).
- Level 1 – Main Reception, clinical trials area, and Institute administration
- Levels 2 & 3 – Dry research laboratories (with possible future conversion of Level 3 to wet laboratory usage)
- Level 4 – Wet Research Laboratory and associated support services (write-up areas, administrative offices and amenities), and
- Level 5 – shell space for future expansion.

The storage and use of dangerous goods and hazardous substances at the premises

Dangerous goods and hazardous substances are to be kept in the Basement, on Level 1 and on Level 4 (with a possibility of future storage and usage on levels 3 & 5).

Nature and quantities of goods being stored and handled at the facility

The proposed chemical inventory for the wet laboratory activities to be conducted at IHRI has been obtained by reviewing the list of substances currently kept at the Wallace Wurth building of the University of NSW Kensington Campus (a bio-medical research facility closely paralleling the operations of the IHRI), a wet laboratory complex populated by 60 researchers. This list has been appended to this report (as APPENDIX C). Quantities were then extrapolated to allow for the increase in researcher numbers (to 145 people), and then adjusted down for the stock rationalization that will result from having a common bulk store for flammable liquids in the Basement.

The resulting manifest in APPENDIX A, confirmed through user meetings and consultation, incorporates the following agreed assumptions:

- ambit is in sizing the flammable liquid store and the wastes processing and storage facility (both located in the IHRI basement) is to provide for shared usage of these facilities by both IHRI and the adjacent HSB activities
- provision of a shared flammable liquid store will allow the inventory of flammable liquids in laboratory spaces to be reduced to minimal quantities
- As a principle, the facilities for any dangerous goods of any classes or divisions of dangerous goods have not been listed if their quantity is less than 10% of the minor storage limit (the concept of minor storage being explained later in this section

- the list does not include the possible inventory of dangerous goods on Levels 2 & 3 from any future change of usage of those levels (from dry to wet laboratory activities) – it is however noted that in the case of flammable liquids the possible increase in the stored quantity is likely to be in the order of less than 100 L per floor

The dangerous goods storage facilities described in APPENDIX A include:

- a gas cylinder store for compressed non-flammable Division 2.2 & 2.2/5.1 gases
- liquefied Class 2, Division 2.2 cryogenic nitrogen gases (in bulk) and in vapour phase refrigerators
- Class 3 packaged flammable liquids
- Class 6, Division 6.1 toxic substances
- Class 8 corrosive substances, and
- Class 9 miscellaneous dangerous goods.

It has been confirmed that no dangerous goods of Class 7 (radioactive substances) are to be kept in the building.

Goods falling within the exclusion listed in the assumptions earlier in this report for small quantities (less than 10% of minor storage quantity thresholds) include:- Class 4 solids (Division 4.1 - flammable solids, Division 4.2 – goods liable to spontaneous combustion and Division 4.3 – goods that in contact with water emit flammable gasses;) and Class 5, Division 5.1 - oxidising substances. In the small quantities that are proposed to be kept these goods are of low hazard, and are in any event subject to rudimentary precautions and control measures of a similar nature to precautions required for non-hazardous goods.

The Applicability of State Environmental Planning Policy 33 (SEPP 33)

State Environmental Planning Policy (SEPP) 33 is an enabling instrument that links the safety and pollution control performance to the permissibility of an industrial proposal. SEPP 33 applies to any proposals that fall under the policy's definition of 'potentially hazardous industry' or 'potentially offensive industry' (i.e. where the quantities of dangerous goods or transport movements involving dangerous goods exceeds the threshold limits described in the document Applying SEPP 33).

Based on the quantities of goods listed in APPENDIX A, and in accordance with the outcome of the screening method for potentially hazardous development summarised in Table 1 overleaf, the provisions of SEPP 33 does not apply to the proposed development.

I am advised that no licence is required pursuant to the Chapter 3 of the *Protection of the Environment Operations Act* hence the IHRI activity is not potentially offensive development in accordance with the screening method for the application of SEPP 33.

As a consequence of being neither potentially hazardous nor potentially offensive development, SEPP 33 does not apply to the IHRI project.

SEPP 33 applies if	Threshold	Actual
Class 2 non-flammable gases and cryogenic liquids exceed limit described in Table 1 in the section Risk Screening - Figure 9 of the document <i>Applying SEPP 33</i>	No limit is set	SEPP 33 - does not apply
Class 3 dangerous goods are not sufficiently separated from the boundary by the distance given in the section Risk Screening - Figure 9 of the document <i>Applying SEPP 33</i>	In the case of Class 3 PG II/PG III flammable liquids, the lowest threshold limit below which SEPP does not apply is 2,000 L	Quantities below threshold limit - SEPP 33 does not apply–
Quantity of goods of Class 5.1 exceeds threshold described in Table 1 of the screening method	Threshold quantity is 5 tonnes	Quantities below threshold limit – SEPP 33 does not apply
Quantity of goods of Class 6.1 exceeds threshold limit	Threshold quantities 0.5 tonnes for PG I; 2.5 tonnes PG II/III	Quantities below threshold limit - SEPP 33 does not apply
Quantity of goods of Class 8 exceeds threshold limit	Threshold quantities 5 tonnes for PG I; 25 tonnes PG II; 50 tonnes PG III	Quantities below threshold limit - SEPP 33 does not apply
Number of significant transport movements meeting the specified criteria are exceeded	No of traffic movements of goods greater than 1 tonne capacity exceed the frequencies set in the screening threshold	SEPP 33 does not apply – number of transport movements are below threshold limit

Table 1 – Applicability of SEPP 33

The proposed storage, use and management of any hazardous materials

The design of the facilities for the receiving, storage, handling and use of hazardous materials, and the proposed operations of the IHRI activity, will be in accordance with:

- the Building Code of Australia
- the NSW *Occupational Health and Safety Act 2000* and the *Occupational Health and Safety Regulation 2001* (particularly Part 6 – *Hazardous substances* and Part 6A *Dangerous goods*)
- the various standards relating to the storage and handling of specific classes of dangerous goods, including:
 - AS 1894-1997 *The storage and handling of non-flammable cryogenic and refrigerated liquids*
 - AS/NZS 4332-2004 *The storage and handling of gases in cylinders*

- AS 1940-2004 *The storage and handling of flammable and combustible liquids*
- AS/NZS 5026 *The storage and handling of Class 4 dangerous goods* (note that this standard is only a consultation draft and is therefore only used for guidance)
- AS 4326-2008 *The storage and handling of oxidising substances*
- AS 2714-2008 *The storage and handling of hazardous chemical materials – Class 5.2 substances (organic peroxides)*
- AS/NZS 4452-1997 *The storage and handling of toxic substances*
- AS 3780-2008 *The storage and handling of corrosive substances, and*
- AS/NZS 4681-2000 *The storage and handling of Class 9 (miscellaneous) dangerous goods and articles*
- standards covering the design and operation of laboratories and equipment for use in laboratories, particularly:
 - AS/NZS 2982.1-1997 *Laboratory design and construction – Part 1: General requirements* (especially Section 7 - Storage of hazardous substances), and
 - The AS/NZS 2243 series of standards *Safety in Laboratories*
 - AS 4775-2007 *Emergency eyewash and shower equipment*
- standards covering the classification of hazardous areas that describe the spaces from which ignition sources must be excluded, particularly AS/NZS 60079.10.1-2009 *Explosive Atmospheres – Part 10.1 : Classification of areas – Explosive gas atmospheres (IEC 60079-10-1, Ed. 1.0(2008) MOD)*
- the *Code of Practice – Storage and Handling of Dangerous Goods* (2005) – WorkCover NSW.
- the Department of Health and Aging, Office of Gene Technology Regulator, *Guidelines for Certification of a Physical Containment Level 2 Laboratory*, Version 3.1– Effective 1 July 2007

Adherence to these standards ensures that the facilities and activities of the IHRI will be in accordance with best-practice achievable for a bio-medical research facility, and will secure an acceptable level of safety.

The likely waste streams containing dangerous goods and hazardous substances to be generated during demolition, construction and operation; and describe the measures to be implemented to minimise, reuse, recycle and safely dispose of this waste; and describe the measures to be implemented to manage the disposal of hazardous and/or contaminated waste.

It is my understanding that a separate study is to be submitted covering the demolition and construction phases of the project. This separate study will address the waste streams that contain dangerous goods and hazardous substances that are expected to be generated during demolition and construction, along with the measures to be implemented to minimise, re-use, recycle and safely dispose of this waste.

Waste streams from operations will include:

- general waste
- confidential waste
- contaminated waste including sharps (Class 6, Division 6.2 infectious waste) – in terms of the classification, these are more properly biological waste and have been described as such in this report
- biological waste (both clinical and animal)
- cytotoxic waste
- radioactive waste
- chemical waste, and
- recyclable waste.

Of these streams, contaminated waste, biological waste, cytotoxic waste, radioactive waste, and chemical waste, fall within the ambit for which information must be submitted pursuant to the Director General Environmental Assessment Requirements (in that they contain dangerous goods and hazardous substances). The following section describes the nature and quantity of each of these waste streams, along with the measures to be implemented to minimise, reuse, recycle and safely dispose of these waste streams; including the measures to responsibly manage the disposal of hazardous and/or contaminated waste.

Each of the 8 waste streams will be segregated in appropriate waste containers at the point of generation and then placed in waste holding bays located adjacent to work areas on each level of the building. This is to ensure that there is no cross contamination of the various streams nor the inadvertent creation of unnecessary quantities of higher hazard wastes. The wastes are then dealt with as follows:

Contaminated waste –see the following section describing biological wastes generated at the IHRI facility

Biological waste (both clinical and animal) – the biological waste stream is comprised of:

- Clinical waste (sharps) – up to 5 kg of sharps are accumulated in disposable sharps containers. As containers are filled, they are to be transferred to the locked waste storage area in the basement. They are picked up by a licensed waste disposal contractor at approximately two weekly intervals. This stream is classified as being dangerous goods of Class 6, Division 6.2 (infectious substances) and is marked, transported and disposed of appropriately for this class of goods.
- Clinical wastes(other than sharps) – up to 10 kg of clinical (infectious) wastes are generated per week – as for sharps, these wastes are placed in appropriate containers which, when full, are transferred to the locked wastes store room at the basement level for pick up and disposal at a licensed waste disposal facility –

these goods are also classified as being a Class 6, Division 6.2 (infectious substance)

- Treated biological waste from:
 - The Biological Research Unit - cages will be emptied in a biohazard cabinet
 - animal allergens (hair, skin, scalings, faeces, urine, nesting materials, enrichment materials) are autoclaved to render them non-infectious and are stored in lidded Sulo bins up to 660 L maximum/fortnight-.washing equipment will include a pass through rack washer, a pass through tunnel washer and a pass through bottle washer and filling unit - the autoclaving/sterile cage filling area will be connected to the clean up decontamination area by the pass through washing equipment - this area is to be provided with a pass through an autoclave for the sterilisation of bedding for the decontamination of small items - steam supply is to be provided to the autoclave, as well as the carriage washer, and bottle washer for sterilising this waste
 - Wet Laboratory – up to 20 kg (gloves, tubes, plastic consumables) are collected per week, are autoclaved, and then placed in a 240 L Sulo lidded bin in the Basement Level waste store room for pick by the waste contractor for disposal to an approved waste disposal activity
- Chemical waste – up to 50 L of liquid wastes (mainly cell cultures) are collected per week and after pre-treatment with bleach to render them non-infectious, are stored in the Basement Level waste store room for pick by the waste contractor for disposal to an approved waste disposal activity – these substances are not dangerous goods
- Broken glass – broken glass is collected and then placed in a 20 L container in the Basement Level waste store room for pick by the waste contractor for disposal to an approved recycling facility.

Cytotoxic waste – only a very small quantity of cytotoxic active ingredient (of the order of 1 mgm per month) enters this waste stream. The stream is separated into liquids and solids (this latter category being primarily gloves and other protective clothing along with apparatus and implements that may be contaminated with cytotoxic materials) – up to 10 kg per month but with minimal cytotoxic active. Solids and liquids are placed in separate purple containers, marked as containing Class 6, Division 6.1 cytotoxic goods. Full containers are conveyed to the locked waste storage room in the basement from where they are picked up for transport by a licensed waste contractor for incineration at an approved and licensed high temperature waste disposal site.

Radioactive waste – although the original project brief described a radioactive waste stream emanating from the IHRI building, I have been advised that radioactive material will not be used within the building, nor will it be stored or accumulated at the IHRI building for any other activity at the Liverpool Hospital campus.

Chemical waste – up to 10 L per week of flammable waste is collected within the Wet Laboratory in approved Class 3 containers marked as dangerous goods, and on removal from the point of generation, are to be stored in an approved flammable liquid cabinet in the Waste Storage Room on the Basement Level of the building. Up to 20 L of liquid chemical waste (other than flammable liquids) are collected for disposal each week (including up to 5 L of Class 6, Division 6.1 – toxic substances, 5 L of Class 8 – corrosive substances and 5 L of Class 9 miscellaneous substances). Each waste type is segregated into separate containers to eliminate any possible incompatibility issues. Where appropriate, dangerous goods are fully labelled in accordance with the Australian Dangerous Goods Code (including an assigned dangerous goods Packing Group). These wastes are to be consigned to an approved licensed waste transport contractor and conveyed to a licensed waste disposal activity.

All wastes generated and disposed of at IHRI are to be managed using a protocol yet to be promulgated, that will, however, be similar to the procedure used by staff currently undertaking like research functions at the Wallace Wurth building at the University of New South Wales. A copy of this protocol (OHS503 – *Protocol for Chemical Waste Store LG41*) is appended to this advice (APPENDIX D). This will be supplemented by written procedures for the consignment of wastes, in order to ensure that all waste consignor obligations (including the waste tracking requirements prescribed in the *Protection of the Environment Operations (Waste) Regulation 2005*), are fully met

The operational management systems for controlling radiation, chemical and biological hazards, wastes, including any specific emergency and evacuation procedures; fire fighting, and lighting and signage.

Operational management systems are to be developed that will be subject to ongoing control and audit. National Association of Testing Authorities (NATA) accreditation will be sought for the IHRI laboratory activities. This will require demonstrating, et alia, good laboratory practice.

Security arrangements are to be in place to adequately protect staff, visitors, contractors and the general public including:

- providing electronic access control to ensure appropriate levels of security are maintained throughout the facility. Including safe and secure staff only access between the Institute and the research and clinical areas at Liverpool Hospital.
- restricting visitor access to the IHRI building to the Main Lobby, where reception staff will alert resident research staff of their arrival.
- requiring all visitors to be signed-in by a staff member and issued with a visitors pass.

- restricting the entry of visitors from areas beyond the Lobby and waiting area unless they are in the company of an approved user of the facility - access to research areas will be restricted to authorised staff and their visitors.
- subjecting all visitors to the wet lab areas to a security check
- restricting after-hours access to authorised staff and visitors, unless prior arrangements have been made.

There will be no radiation hazards present in the building, it being proposed that all research involving the use of radioactive isotopes such as C14 and Tritium will be conducted in the Radiation Laboratory of an adjoining existing building (HSB Level 4). Special disposal arrangements are not required for the isotopes C14 and Tritium. The use of non-radioactive methods of testing will be encouraged.

As regards the systems for managing biological hazards, the Wet Laboratories and the BRU have been designed to achieve and maintain PC2 certification from the Office of Gene Technology Regulator (OGTR) – although it is intended that the BRU initially will be certified at PC1 OGTR level. Maintaining certification requires that all assessment criteria be fully satisfied. All personnel using these facilities are to be trained in PC2 - OGTR laboratory procedures, and have their competence regularly assessed/reviewed. In the future it is possible that the protection level of some facilities (such as tissue culture) may be raised to meet PC3 requirements.

Measures for the control of biological hazards (other than wastes that are described earlier in this report), include:

- the consideration given to laboratory classifications, containment devices, levels of bio-safety containment and fire safety, during the planning and design process
- the provision of hand washing basins and emergency shower facilities as prescribed by relevant laboratory standards.
- the provision of ventilation designed to minimise spread of odours and airborne pathogens (in accordance with Australian Standards).
- the provision of bio-safety cabinets (Class 1 and 2) in the laboratory areas - Class 1 cabinets protect the users from the material in them and Class 2 cabinets prevent contamination of material by the users
- the application of PC2 standards in all areas where biological agents are handled.
- the facility incorporated into the design to allow part of the PC2 compliant area to be upgraded to PC 3 standards with a minimum of disruption to the facility in the future.
- The provision of clean areas for paperwork or work on computer terminals should be clearly separated from laboratory work areas.
- The provision of sinks and drainage for hand hygiene and lockers for personal protective equipment conveniently available immediately adjacent to the laboratory work areas.

- in the event that computer terminals are needed in an area where there is a biohazard the design will minimise the risk of spread of contamination (not only by micro-organisms but also by amplicons) by ensuring that terminal access devices are either easy to clean or incorporate virtual keyboard technology
- stairwells connecting the laboratory floors are to meet PC2 requirements so as to allow researchers the convenience of moving between laboratories without the need to de-gown
- access to the BRU clean zone will be via an entry/exit airlock with a barrier just inside the door beyond which overshoes must be worn - beyond the barrier, space will be provided for the donning of gowns, hair nets and gloves following hand washing - the entry airlock will be positive pressured relative to the outside corridor
- staff and visitors will egress from the BRU clean zone through the airlock which will be provided with a wash hand basin and skips/bins for soiled gowns etc.
- all access and egress points will be equipped with automatic door seals to prevent animals from escaping the PC2 perimeter
- sealed flooring and walls are to be provided to allow easy cleaning, with all animal holding areas equipped with vaporous hydrogen peroxide (VHP) fumigation ports.
- clean up decontamination areas are to have sufficient space for the cleaning of cages and racks.

If there is any requirement for pathology processing and storage for clinical trials research groups (particularly for cardiology and renal studies) where blood and specimens are to be centrifuged prior to analysis, or there is any need to storage pathology specimen tubes and related minor equipment, this will be done external to IHRI (in the Ambulatory Care Centre at Liverpool Hospital).

As regards the management of chemical hazards, the only hazardous activities are:

- the decanting of flammable liquids (for which a purpose-designed decanting bench will be provided in the Flammable Liquid Store in the Basement)
- the handling and use of dangerous goods and hazardous substances in working areas of the Wet Laboratory (exposure will be limited and controlled by a combination of using fume cupboards, and good laboratory practice), and
- the storage of dangerous goods and hazardous substances (where storage facilities and practices will be in accordance with relevant dangerous goods class standards, the *Safety in Laboratories* standard, and Codes of Practice including the *Storage and Handling of Dangerous Goods* and *Control of Workplace Hazardous Substances*)

The IHRI will adopt simple risk management protocols for controlling chemical hazards that include:

- keeping incompatible (ie goods that can interact or react dangerously) apart, eliminating ignition sources from the vicinity of spaces where flammable liquids, gases, vapours, or solids may be present
- providing sufficient ventilation to prevent the build up of flammable and explosive vapours and gases, or the presence of any atmospheric contaminant that could adversely affect people's health
- fume cupboard exhaust ducts are to discharge external to the building above roof level (the extent to which these can be substituted by fume cabinets with filters are generally limited)
- keeping dangerous goods separated from areas where people congregate or work and restricting access of unauthorised people
- providing a store for organic solvents (other than flammable liquids) and acids with a fume hood for the decanting adjacent to the loading dock.
- providing approved storage cabinets for flammable solvents and acids on laboratory floor spaces.
- providing suitable containment for any spillage or leakage of the goods, and some basic fire protection, environmental protection and personal protection measures (including equipment such as extinguishers, safety showers, flash-back arrestors and the like)
- eliminating wherever practicable, the storage of gas cylinders within laboratory spaces
- locating the liquid nitrogen storage facilities so as to minimise transport distances within the building
- providing sealed concrete floors with a set down to contain spillage where liquid nitrogen is stored and handled.
- providing 24 hour monitored oxygen level sensors where liquid nitrogen is stored and handled.
- Ventilating spaces with the capability of automatic boost exhaust on an oxygen deficiency alarm condition where liquid nitrogen is stored and handled.
- Monitoring the temperature of the -80°C freezers 24 hour/7 days
- managing situations where asphyxiant gases may accumulate in quantities sufficient to pose any credible risk of dangerous oxygen deficiency
- in addition to the equipment provided to comply with the BCA requirements, fire extinguishers are to be provided to meet the requirements of the relevant individual dangerous goods storage and handling standards for each dangerous goods class.
- in recognition of the risks associated with decanting in the flammable liquid store, a foam and a dry powder extinguisher is to be provided - all other dangerous goods storage locations are to be provided with a dry powder fire extinguisher rated at least 2A 60 B(E).
- a single water hose point connection is to be provided within 8 m of the gas cylinder store for fire protection

- all laboratory spaces are provided with emergency eyewash and shower facilities, positioned in accessible locations that require no more than 10 seconds of elapsed travel time to reach.

Statutory dangerous goods signage

The inventory of dangerous goods for the IHRI building facility exceeds the placarding threshold limit but does not exceed the manifest level as described in Part 6A of the *Occupational Health and Safety Regulation 2001*.

As a consequence of exceeding the placard quantity there is a requirement for a HAZCHEM sign and storage location placarding at building entry points, and for individual depot signage (dangerous goods class labels) to be displayed.

General conclusion

As stated earlier in this advice, based on the information provided to me as described in this report, it is my opinion that SEPP 33 does not apply to the proposed IHRI development.

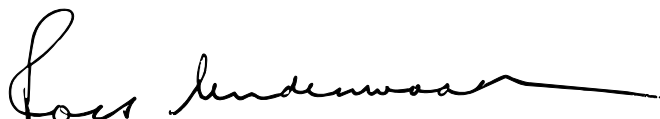
Further, the proposed facilities for the storage, handling and use of dangerous goods and hazardous substances, will be in compliance with all relevant legislative requirements, having been designed in accordance with best practice principles for the management of risk to health and safety posed by the materials to be kept and used. It will therefore secure a level of safety and environmental performance described in the relevant standards and codes of practice applying to wet laboratory and biological research facilities, thereby meeting deemed compliance with relevant statutory instruments and obligations.

Should you need to clarify any of this advice, or raise any other issues, I would be happy provide further assistance.

I thank you for the opportunity of providing advice in these matters.

Yours sincerely

Safety Engineering & Technical Services Pty Ltd



Ross Underwood, MIEAust, CPEng, MSIA, MAIDGC
General Manager

DISCLAIMER

This opinion in relation to the compliance of the facilities to be provided at the Ingham Health Research Institute at the Liverpool Hospital Campus was prepared impartially and the assessment completed independently by Safety Engineering & Technical Services Pty Ltd. The report reflects our best judgement based on the information available at the time of preparation. However, any use that any party makes of the documentation is the responsibility of such party. Safety Engineering & Technical Services Pty Ltd accepts no responsibility whatsoever for damages (if any) suffered by any party in reliance on information contained in this report.

APPENDIX A List of dangerous goods storage depots at IHRI

Room Name	DG Class	PG	Room Usage/Hazardous contents	Q'ty	Comments
Basement Level					
Flammable Liquids Package Store	3	II/III	Packaged flammable liquids	500 L	- Store to be constructed to comply with AS 1940-2004 <i>The storage and handling of flammable and combustible liquids</i> - Decanting of ethanol, methanol, acetone and acetonitrile is done in store but on a purpose-designed decanting bench with enhanced ventilation to reduce hazard zone to 5 m lateral spread from decanting bench
Wastes Storage/Holding Room	3	II/III	Flammable liquids in an approved 30 L cabinet	30 L	About 10 L per week of flammable liquid waste is generated and requires storage pending pick up by a licensed waste contractor
	6.1	I	Cytotoxic drug wastes	5 L /fortnight (liquid) 10 kg /month (solids)	- Very small quantity (< 1 g) active aqueous waste - kept in purple container - removed by licensed waste contractor for incineration at an approved high temperature disposal facility - Gloves and protective clothing
	6.2	II	Clinical wastes	5 kg 10 kg	- Infectious sharps - Infectious wastes
	6.1	III	Toxic chemicals waste	5 L	Segregated from dangerous goods of other classes
	8	III	Corrosive substances waste	5 L	Segregated from dangerous goods of other classes
	9	III	Miscellaneous dangerous goods waste	5 L	Segregated from dangerous goods of other classes
	NCADG	-	Chemical wastes (non-dangerous goods)	5 L	Segregated from incompatible substances

Room Name	DG Class	PG	Room Usage/Hazardous contents	Q'ty	Comments
Wastes Storage/Holding Room (continued)	NCADG	-	Treated biological waste	100 kg	Biological Research Unit - animal allergens (hair, skin, scalings, faeces, urine, nesting materials enrichment materials) are autoclaved to render them non-infectious and are stored in lidded Sulo bins up to 660 L maximum volumetric capacity per fortnight
				20 kg	Solid waste from the Wet laboratory– gloves, tubes, plastic articles etc – these wastes are autoclaved and stored in a 240 L Sulo bin
				50 L	Up to 50 L of liquid chemical waste(cell culture) treated with bleach solution for disposal as chemical waste
	Non-haz		Broken glass	20 L	Volume of container of broken glass accumulated for recycling
Ground Level					
Tissue Bank	2.2	-	Liquid Nitrogen	1,850 L	- LN2 Storage tank of 950 L (water) capacity 3 x 300 L (water capacity) LN2 vapour phase freezer vessels
Gas cylinder store	2.2 & 2.2/5.1	-	Compressed non-flammable gases - CO ₂ in air (20 L, argon (100L), carbon dioxide (300 L), nitrogen (100 L), plus oxidising gas - oxygen (20 L)	640 L	Below minor storage limit (2,000 L of Class 2.2 of which no more than 1,000 L may be oxidising gass)
Level 4					
Wet Laboratory	3	I/II & III	Flammable liquids	250 L	A free standing (1 x 250 L) approved cabinet is allowed – a possible option is to disperse storage in 50 L maximum capacity under-bench units
	6.1	II/III	Toxic substances	30 L	Subject to compatibility , Class 9 dangerous goods to be co-stowed in an under-bench cabinet
	8	II/III	Corrosive substances (acids)	30 L	Under-bench cabinet

Room Name	DG Class	PG	Room Usage/Hazardous contents	Q'ty	Comments
Tissue culture	3	II/III	Flammable liquids	30 L	• Under-bench cabinet
General Lab (Wet)	3	II/III	Flammable liquids	30 L	• Under-bench cabinet
	6.1	II/III	Toxic substances	30 L	• Under-bench cabinet
	8	II/III	Corrosive substances (acids)	30 L	• Under-bench cabinet
Possible future Levels 3 & 5 (if these floors are developed for wet laboratory usage)					
Wet Laboratory	3	I/II & III	Flammable liquids	250 L	• A free standing (1 x 250 L) approved cabinet is allowed – a possible option is to disperse storage in 50 L maximum capacity under-bench units
	6.1	II/III	Toxic substances	30 L	• Subject to compatibility , Class 9 dangerous goods to be co-stowed in an under-bench cabinet
	8	II/III	Corrosive substances (acids)	30 L	• Under-bench cabinet
	8	II/III	Corrosive substances (base/neutral)	30 L	• Under-bench cabinet

NOTES:

NCADG - Not classified as dangerous goods
PG - Packing Group – a measure of the relative hazard of a dangerous good of Class 3, 4, 5, 6, 8 & 9 – PG I goods are those of highest hazard, PG II goods are of moderate hazard, and PG III are goods of relatively low hazard

APPENDIX B

Who provided the advice in this report?

This report was prepared by Ross Underwood, a graduate mechanical engineer with postgraduate qualifications in industrial engineering from the University of New South Wales, with over 43 years experience in industrial practice.

The first 12 years of his professional career were spent in the petrochemical industry where he was involved in a variety of different functions including engineering maintenance, major new plant construction, project work associated with energy conservation and improving environmental performance, and chemical plant production management. He then spent 3 years managing reconstruction works at the Pymont Sugar Refinery, before being appointed as Personnel and Administration Manager for a major manufacturing activity, a position he held for 5 years.

In 1986 he established Safety Engineering and Technical Services Pty Ltd, a safety consulting and engineering contracting/consulting business. His company has undertaken a number of consulting tasks in safety management for a very diverse range of private sector industrial and government clients including what was then the NSW WorkCover Authority.

Ross has conducted specific training programs and seminar sessions in safety awareness, accident investigation & other safety skills at all organisational levels. He was formerly accredited by WorkCover NSW as a trainer in workplace consultation, building industry induction, hazardous substances and risk management courses. He has trained management & employee safety committee representatives from over 80 different organisations. He has lectured in OH&S for both undergraduate and postgraduate students at the universities of UNSW, Sydney, Western Sydney and the University of Technology. He has undertaken longer term engineering contracting/consulting assignments in the brewing, building and manufacturing/industrial, warehousing and transport, government and military sectors.

His particular areas of expertise include:- dangerous goods storage, handling and transport matters; laboratory design; occupational health and safety performance auditing; construction management; plant & machinery safety, maintenance; industrial relations; accident investigation; workplace and safety system auditing; product packaging and labelling; and, the formulation and maintenance of safe work systems (including the preparation of emergency response and environment management plans). He has also been involved in the pre-planning and design of a number of major manufacturing plant and warehouse projects and has prepared risk and hazard analyses as part of the process for securing development approval for these facilities. He has provided a number of expert opinion reports for litigated matters related to oh&s and dangerous goods matters.

He has provided specialist advice on dangerous goods and more general occupational health and safety issues associated with several major building/re-building projects most recently including:- the Special Operations Working Accommodation Upgrade Project; the 171 Aviation Squadron (Blackhawk helicopter) Relocation Project, HMAS Creswell Redevelopment at Jervis Bay, and the ASC Shipyard Redevelopment– all for

the Australian Defence Forces; and, the major redevelopment of the University of New South Wales North Mall (including new facilities for Applied Science and Chemistry)

Ross has contributed as an author to a number of technical journals and to the CCH International *Occupational Health & Safety Manual*, the *Plant Safety* manual, the *OHS Manager- The Hands on Guide* and the *2003 Australian master OH&S & environment guide*.

He is a Member of the Institution of Engineers, Australia, a Member of the Safety Institute of Australia, a Chartered Member of the Australian Human Resources Institute, and a founding member of the Australasian Institute of Dangerous Goods Consultants.

He has completed Certificate IV courses in Workplace Safety, and Workplace Assessment and Training, and the Risk & Liability Management short course convened by Engineering Education Australia.

APPENDIC C

OHS603

Chemical Register Form


UNSW
 THE UNIVERSITY OF NEW SOUTH WALES

Password: IIRC

Prepared By:	IIRC staff (compiled by Cristan Herbert)				Building:	Wallace Wurth (C27)							
School:	Medical Sciences - Pathology				Room Number:	524 - IIRC main laboratory							
Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
10% CO2 in Air - NOS (072)	10024-97-2	2.2	n/a	1070	Y - contact with combustible material may cause fire	Room 524 - PC2 laboratory	BOC	Laboratory reagent	D	1	1D	Mar-10	n/r
Argon (062)	7440-37-1	2.2	n/a	1006	N	Room 524 - Cylinder storage	BOC	Laboratory reagent	G	1	1G	Jul-09	n/a
Carbon dioxide (081)	124-38-9	2.2	n/a	1013	N	Room 524 - Cylinder storage	BOC	Laboratory reagent	G	4	4G	Mar-10	n/a
Nitrogen (034)	7727-37-9	2.2	n/a	1066	N	Room 524 - Cylinder storage	BOC	Laboratory reagent	G	1	1G	Mar-10	n/a
Oxygen (400)	7782-44-7	2.2	n/a	1072	N	Room 524 - PC2 laboratory	BOC	Laboratory reagent	D	1	1D	Sep-09	n/a
2-Methylbutane #320404	78-78-4	3	I	1265	Y, Extremely flammable, Toxic	Rm 524 - flammable liquid cabinet	Sigma	Laboratory reagent	1L	2	2L	Jul-07	n/r
2-Methylbutane (320404)	78-78-4	3	I	1265	Y, Extremely flammable, Toxic	Rm 524 - flammable liquid cabinet	Sigma	laboratory reagent	1L	1	1L	Jul-07	n/r
Petroleum Ether (261734)	8032-32-4	3	I	1268	Y	Rm 524 - flammable liquid cabinet	Sigma	laboratory reagent	1L	2	2L	Aug-09	n/r
2-Propanol (19516)	67-63-0	3	II	1219	Y - Flammable	Rm 524 - flammable liquid cabinet	Sigma	laboratory reagent	500mL	1	500mL	Sep-09	n/r
2-propanol (2006617)	67-63-0	3	II	1219	Y - Flammable	Rm 524 - flammable liquid cabinet	Lancaster	Laboratory reagent	250 ml	1	250 ml	Mar-10	n/r
Acetone	67-64-1	3	II	1090	Y, Highly flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	AJAX Chemicals	Laboratory reagent	2.5L	2	5 L	Aug-05	n/r

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Acetone #JJ006	67-64-1	3	II	1090	Y, Highly flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	FRONINE PTY LTD	Solvent	2.5L	1	2.5 L	Aug-05	n/r
Acetone (batch # 0802010)	67-64-1	3	II	1090	Yes (highly flammable, irritating to eyes, vapour may cause drowsiness and	Rm 525 - flammable liquid cabinet	Analytical Univar Reagent	Laboratory reagent	2.5 litres	1	2.5 L	Aug-05	n/r
Acetonitrile #2315-2.5L	75-05-8	3	II	1648	Y, Highly flammable liquid, Toxic	Rm 524 - flammable liquid cabinet	AJAX FINECHEM	Laboratory reagent	2.5L	1	2.5L	Mar-08	n/r
Acetonitrile (batch # 08100192)	75-05-8	3	II	1648	Yes (highly flammable, harmful by inhalation, irritating to eyes)	Rm 525 - flammable liquid cabinet	Lab-scan analytical science	Laboratory reagent	4 litres	1	4 L	Dec-07	n/r
Ethanol #JJO0ABS2.5	64-17-5	3	II	1170	Y, Flammable liquid	Rm 524 - flammable liquid cabinet	FRONINE PTY LTD	Laboratory reagent	2.5L	2	5 L	Aug-07	n/r
Ethanol, absolute (batch#48770)	64-17-5	3	II	1170	Y, Highly flammable liquid, Harmful	Rm 525 - flammable liquid cabinet	Fronine laboratory supplies	Laboratory reagent	20 litres	3	60 Litres	Aug-07	n/a
Ethyl Alcohol #27074-1	64-17-5	3	II	1170	Y, Highly flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	Sigma	Laboratory reagent	1L	1	1 L	May-07	n/r
Ethyl Alcohol #E7023	64-17-5	3	II	1170	Y, Highly flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	Sigma Aldrich	Laboratory reagent	500ml	1	500 ml	May-07	n/r
Histomount	28262-63-7 & 108-88-3	3	II	UN1294	Y, Flammable and Harmful	Rm 525 - flammable liquid cabinet	National Diagnostics	Histology reagent	500mL	1	500mL	Feb-07	n/r
JB4 plus accelerator solution B (18570B)	123911, 75070; 121697; 75249	3	II	1165	Y - Possible carcinogen	Rm 524 - flammable liquid cabinet	Polysciences	Laboratory reagent	35 ml	1	35 ml	Nov-06	n/r
Methanol #JJ024	67-56-1	3	II	1230	Y, Flammable liquid	Rm 524 - flammable liquid cabinet	FRONINE PTY LTD	laboratory applications	2.5L	2	2.5 L	Aug-05	n/r
Methanol AR (batch# 32315654)	67-56-1	3	II	1230	Yes (toxic highly flammable)	Rm 525 - flammable liquid cabinet	Fronine laboratory supplies	laboratory reagent	20 litres	1	20 litres	Jul-09	n/r
n-HEXANE #2320-2.5L	110-54-3	3	II	1208	Y, Flammable liquid, Toxic	Rm 524 - flammable liquid cabinet	AJAX FINECHEM	laboratory applications	2.5L	1	2.5L	Apr-08	n/r
phenyl sepharose (contains ethanol)	n/a; 64-17-5	3	II	1170	Y - irritating to eyes	Rm 524 - flammable liquid cabinet	Pharmacia	Laboratory reagent	50 ml	1	50 ml	Feb-06	n/r

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Propan-2-ol	67-63-0	3	II	1219	Y, Flammable liquid	Rm 524 - flammable liquid cabinet	Selby Biolab	Laboratory reagent	2.5L	1	2.5L		n/r
PROPAN-2-OL #ISOPRO*2G	67-63-0	3	II	1219	Y, Flammable liquid	Rm 524 - flammable liquid cabinet	FRONINE PTY LTD	Laboratory reagent	2.5L	1	2.5L	Mar-07	n/r
Propan-2-ol (batch# 836670)	67-63-0	3	II	1219	Yes (highly) flammable, irritating to eyes, vapour may cause dizziness and	Rm 525 - flammable liquid cabinet	Fronine laboratory supplies	Laboratory reagent	2.5 litres	1	1	Mar-07	n/r
Toluene (batch # 2E106)	108-88-3	3	II	1294	Yes (highly) flammable, irritating to skin, may cause lung damage if	Rm 525 - flammable liquid cabinet	Analytical Univar Reagent	Laboratory reagent	2.5 litres	1	1	Apr-06	n/r
Wright's stain	61-73-4 17372-87-1	3	II	1230	Yes (flammable) swallowed; Risk of serious damage to eyes	Rm 524 - flammable liquid cabinet	Fronine	Laboratory reagent	500ml	1	500ml	Nov-09	n/r
Wright's stain	61-73-4 17372-87-1	3	II	1230	Yes (flammable) swallowed; Risk of serious damage to eyes	Rm 524 - flammable liquid cabinet	Sigma	Laboratory reagent	25g	1	25g	Nov-09	n/r
Wright's stain	61-73-4 17372-87-1	3	II	1230	Yes (flammable) swallowed; Risk of serious damage to eyes	Rm 524 - flammable liquid cabinet	BDH	Laboratory reagent	25g	1	25g	Nov-09	n/r
2-Methoxyethanol	109-86-4	3	III	1188	Y	Rm 524 - flammable liquid cabinet	AJAX Chemicals	Laboratory reagent	2.5L	1	2.5	Mar-09	n/r
2-Methoxyethanol (64719)	109-86-4	3	III	1188	Y	Rm 524 - flammable liquid cabinet	Sigma	Laboratory reagent	250mL	1	250 ml	Mar-09	n/r
BUTAN-1-OL #10061	71-36-3	3	III	1120	Y, Flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	BDH Chemicals	Laboratory reagent	2.5L	1	2.5 L	Dec-06	n/r
Butan-1-ol or Butanol-1	71-36-3	3	III	1120	Yes, very hazardous in case of skin/eye contact	PRG Rm524 Acid cabinet	GPR	Laboratory reagent	2.5L	1	2.5 L	Jun-08	n/r
Ethylene glycol monomethyl ether (E5378)	109-86-4	3	III	1188	Y - Flammable. May impair fertility. May cause harm to the unborn child.	Rm 524 - flammable liquid cabinet	Sigma	Laboratory applications	500mL	1	500mL	Aug-08	Req
Formaldehyde	50-00-0	3	III	1198	Yes, Causes burn	PRG Rm524 Acid cabinet	Sigma	Laboratory reagent	500 ml	1	500 ml	Dec-09	n/r
Formaldehyde #252549	50-00-0	3	III	1198	Y, Flammable liquid, Corrosive, Toxic	Rm 524 - flammable liquid cabinet	Sigma	Fixation	500ml	1	500 ml	Oct-07	n/r

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Formaldehyde (252549)	50-00-0	3	III	1198	Y, Flammable liquid, Corrosive, Toxic	Rm 524 - flammable liquid cabinet	Sigma	Laboratory reagent	500mL	1	500mL	Oct-07	n/r
Formaldehyde solution #10113	50-00-0	3	III	1198	Y, Flammable liquid, Corrosive, Toxic	Rm 524 - flammable liquid cabinet	Merck	Fixation	2.5L	1	2.5L	Feb-06	n/r
Formaldehyde solution #809	50-00-0	3	III	1198	Y, Flammable liquid, Corrosive, Toxic	Rm 524 - flammable liquid cabinet	AJAX FINECHEM	Fixation	2.5L	1	2.5L	Feb-06	n/r
iso-Amyl alcohol #10038	123-51-3	3	III	1105	Y, Flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	BDH Chemicals	laboratory applications	500ml	1	0.5L	Sep-07	n/r
Iso-AMYL Alcohol (51507)	123-51-3	3	III	1105	Y, Flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	AJAX Chemicals	laboratory reagent	500mL	1	500mL	Sep-07	n/r
Iso-AMYL Alcohol (I-1885))	123-51-3 (1885)	3	III	1105	Y, Flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	Sigma	laboratory reagent	500mL	1	500mL	Sep-07	n/r
N,N-DIMETHYL FORMAMIDE #2217	68-12-2	3	III	2265	Y, Flammable liquid, Harmful	Rm 524 - flammable liquid cabinet	AJAX FINECHEM	laboratory applications	500ml	1	500 ml	Nov-06	n/r
N,N-Dimethylformamide (128F3666)	68-12-2	3	III	2265	Y - flammable, harmful by inhalation	Rm 524 - flammable liquid cabinet	Sigma	Laboratory reagent	500mL	1	500 ml	Jan-07	n/r
N,N-Dimethylformamide (7440970)	68-12-2	3	III	2265	Y - flammable, harmful by inhalation	Rm 524 - flammable liquid cabinet	Mercle	Laboratory reagent	500mL	1	500 ml	Jan-07	n/r
N,N-Dimethylformamide (99F0588)	68-12-2	3	III	2265	Y - flammable, harmful by inhalation	Rm 524 - flammable liquid cabinet	Sigma	Laboratory reagent	250mL	1	250 ml	Jan-07	n/r
Octyl sepharose (17-0790-02)	68652-09-5	3	III	1170	N	Rm 524 - flammable liquid cabinet	Pharmacia	Laboratory reagent	50 ml	1	50 ml	Oct-09	n/a
Xylene (batch # 43850)	1330-20-7	3	III	1307	Yes (flammable, harmful by inhalation and in contact with skin)	Rm 525 - flammable liquid cabinet	Fronine laboratory supplies	Laboratory reagent	20 litres	1	20 litres	Mar-06	n/r
XYLENES #576-2.5L	1330-20-7	3	III	1307	Y, Flammable liquid, Poison	Rm 524 - flammable liquid cabinet	ASIA PACIFIC SPECIALTY CHEMICALS LIMITED	Laboratory reagent	2.5L	1	2.5L	Dec-06	n/r
Sodium dodecyl sulfate	151-21-3	4.1	II	2926	Y, Flammable, irritant	Rm 524 - General chemicals	Sigma	Laboratory reagent	500g	1	500 g	Sep-08	n/r

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Sodium dodecyl sulfate	151-21-3	4.1	II	2926	Y, Flammable, irritant	Rm 524 - General chemicals	Sigma	Laboratory reagent	100g	1	100 g	Sep-08	n/r
Sodium dodecyl sulfate	151-21-3	4.1	II	2926	Y, Flammable, irritant	Rm 524 - General chemicals	BDH	Laboratory reagent	500g	1	500 g	Jan-09	n/r
Sodium dodecyl sulfate (L4390)	151-21-3	4.1	II	2926	Y - Highly flammable. Harmful in contact with skin and if swallowed.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	500g	1	500g	Apr-10	n/r
Sodium dodecyl sulfate (L5750)	151-21-3	4.1	II	2926	Y - Highly flammable. Harmful in contact with skin and if swallowed.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	1kg	1	1kg	Apr-10	n/r
Paraformaldehyde	30525-89-4	4.1	III	2213	Yes, Harmful by inhalation and if swallowed. Irritating to respiratory system.	Rm 524 - General chemicals	BDH chemicals	laboratory reagent	500g	1	500 g	Jun-07	n/r
Paraformaldehyde	30525-89-4	4.1	III	2213	Yes, Harmful by inhalation and if swallowed. Irritating to respiratory system.	Rm 524 Cold-room Under sink	Sigma	laboratory reagent	1 kg	1	1000 g	Jun-07	n/r
Sodium Borohydride (452882)	16940-66-2	4.3	I	1426	Y	Rm 524 - flammable solid (4) DG shelf	Sigma	laboratory reagent	25g	1	25g	Apr-09	n/r
Sodium tetrahydridoborate (borohydride)	16940-66-2	4.3	I	1426	Yes, dangerous when wet	Rm 524 - flammable solid (4) DG shelf	Sigma	laboratory reagent	10g	1	10 g	Mar-09	n/r
Perchloric acid (8238)	7601-90-3	5.1	I	1873	Y - Causes burns	Room 524 - IIRC corrosive cabinet	BDH	Laboratory reagent	500 ml	1	500 ml	Apr-10	n/r
Perchloric acid 60%	Mixture (7601-90-3 and 7732-18-5)	5.1	I	1873	Yes, Causes burn	PRG Rm524 Acid cabinet	AnalaR/BDH chemicals	laboratory reagent	500 ml	1	500 ml	Jun-08	n/r
Hydrogen peroxide (IL#18312)	7722-84-1	5.1	II	2040	Y - Harmful if swallowed	Room 524 - IIRC corrosive cabinet	Riedel de Haen	Laboratory reagent	1000 ml	1	1000 ml	Apr-10	n/r
Lead nitrate	10099-74-8	5.1	II	1469	Yes, Harmful by inhalation and if swallowed. May cause harm to the unborn child.	Rm 524 - Oxidising (5) DG shelf	M&B	Laboratory reagent	500g	1	500 g	Dec 08	n/r
Lead Nitrate (#40641)	10099-74-8	5.1	II	1469	Possible risk of irreversibility by inhalation and if swallowed. Danger of cumulative	Rm 524 - Oxidising (5) DG shelf	May & Baker	Laboratory applications	500g	1	500g	Dec-08	Req
Lead nitrate (L6258)	10099-74-8	5.1	II	1469	Yes, Harmful by inhalation and if swallowed. Danger of cumulative	Rm 524 - Oxidising (5) DG shelf	Sigma Aldrich	Laboratory reagent	100g	1	100 g	Dec 08	n/r

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Lead nitrate (L6258)	10099-74-8	5.1	II	1469	Y - may cause harm to the unborn child. Possible risk of impaired fertility	Rm 524 - Oxidising (5) DG shelf	Sigma	Laboratory applications	100g	1	100g	Dec-08	Req
Silver Nitrate	7761-88-8	5.1	II	1493	Skin and eye contact may cause burns, harmful if inhaled or injected	Rm 524 - Oxidising (5) DG shelf	Sigma	Laboratory reagent	25 g	1	25 g	Jul-07	n/r
Silver Nitrate	7761-88-8	5.1	II	1493	Skin and eye contact may cause burns, harmful if inhaled or injected	Rm 524 - Oxidising (5) DG shelf	Sigma-Aldrich	Laboratory reagent	25 g	1	25 g	Jul-07	n/r
Sodium chlorate (S3171)	7775-09-9	5.1	II	1495	Y (possible carcinogen)	Rm 524 - Oxidising (5) DG shelf	Sigma	Laboratory reagent	100g	1	100g	Jan-09	n/r
Sodium Periodate (#10259)	7790-28-5	5.1	II	1479	Harmful if swallowed. Irritating to eyes, respiratory system and skin	Rm 524 - Oxidising (5) DG shelf	BDH	Laboratory Reagent	100 g	1	100g	Feb-06	Req
Ammonium nitrate	6484-52-2	5.1	III	1942	Y. Toxicity. Oxidising agent	Rm 524 - Oxidising (5) DG shelf	AJAX	Laboratory reagent	500g	1	500 g	Aug-09	n/r
Ammonium peoxidisulphate	7727-54-0	5.1	III	1444	Y. Promote fire	Rm 524 - Oxidising (5) DG shelf	Merck	Laboratory reagent	500g	1	500 g	Jul-09	n/r
Ammonium persulphate (A3678)	7727-54-0	5.1	III	1444	Y. Promote fire	Rm 524 - Oxidising (5) DG shelf	Sigma	Electrophoresis	25 g	1	25 g	May-09	n/r
Magnesium Nitrate, hexahydrate	13446-18-9	5.1	III	1474	Yes - R36/37/38 Irritating to eyes, respiratory system and skin; R8 - Contact	Rm 524 - General chemicals	BDH 10309	laboratory reagent	500g	1	500 g	Apr-09	n/r
Ethidium Bromide	1239-45-8	6.1	I	2811	Y - very toxic by inhalation	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory reagent	25 g	1	25 g	Jul-07	n/r
Indomethacin (I7378)	53-86-1	6.1	I	2811	Y - Very toxic if swallowed.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	10g	1	10g	Mar-10	Req
Osmic acid (D3247)	20816-12-0	6.1	I	2471	Y	Rm 524 - Toxic/Irritant (6) DG shelf	Ajax	laboratory reagent	0.1g	1	100 mg	Nov-07	n/r
Osmium tetroxide	20816-12-0	6.1	I	2471	Y	Rm 524 - Toxic/Irritant (6) DG shelf	Polysciences	laboratory reagent	500 mg	1	500 mg	Dec-08	n/r
Potassium Dichromate	7778-50-9	6.1	I	3288	Avoid inhalation and skin & eye contact	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	500g	2	100 g	Mar-06	n/r

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Sodium selenite (S1382)	10102-18-8	6.1	I	2630	Very toxic. Dangerous for the environment.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	10 g	1	10 g	Feb-10	n/r
Sodium selenite (S1382)	10102-18-8	6.1	I	2630	Very toxic. Dangerous for the environment.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	10g	1	10g	Feb-06	Reg
Phenylmethanesulfonyl fluoride (P7626)	329-98-6	6.1	II	2928	Toxic if swallowed. Causes burns.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	5g	1	5g	Mar-10	Req
3-(α -Acetonylbenzyl)-4-hydroxycoumarin sodium salt (A4571)	129-06-6 & 67-63-0	6.1	II	1544	Y - very toxic if swallowed. May cause harm to the unborn child.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	25g	1	25g	Apr-06	Req
4-amino phenylmercuric acetate (10-556-2)	6283-24-5	6.1	II	2025	Y - very toxic by inhalation	Rm 524 - Toxic/Irritant (6) DG shelf	Aldrich	Laboratory reagent	5 g	1	5 g	Mar-10	n/r
Benzoquinone (42324)	106-51-4	6.1	II	2587	Y toxic & irritant	Rm 524 - Toxic/Irritant (6) DG shelf	Ajax	Laboratory reagent	100g	1	100 g	Nov-07	n/r
Caffeine	58-08-2	6.1	II	1544	Y - harmful if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory reagent	500 g	1	500 g	Feb-09	n/a
cetylpyridinium chloride (190177)	6004-24-6	6.1	II	2811	Y - Toxic if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	ICN	Laboratory reagent	100 g	1	100 g	Mar-10	n/r
Indomethacin	53-86-1	6.1	II	2811	Y-very toxic if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory reagent	10g	1	10g	Jul-07	n/r
Indomethacin (1-7378)	53-86-1	6.1	II	2811	Y-very toxic if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	10g	1	10g	Jul-07	n/r
Iodine (10135)	7553-56-2	6.1	II	3290	Y- harmful by inhalation and in contact with skin	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	laboratory reagent	100g	1	100g	Jul-07	n/r
Mercuric chloride	7487-94-7	6.1	II	3861	Y-Very toxic	Rm 524 - Stain/dye shelf	the British Drug House	Laboratory applications	25g	1	25 g	Jul-06	n/r
Mercuric chloride #10154	7487-94-7	6.1	II	3861	Y-Very toxic	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	Laboratory applications	500g	1	500 g	Jul-06	n/r
Mercury Chloride	7487-94-7	6.1	II	1624	Y - Very toxic if swallowed. Causes burns.	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	Laboratory applications	500g	1	500g	1/10/07	Req

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Mercury II oxide #1641	21908-53-2	6.1	II	1641	Y-acutely toxic	Rm 524 - Toxic/Irritant (6) DG shelf	Ajax	Laboratory applications	100g	1	100 g	Oct-07	n/r
Mercury II sulfate #25445.153	7783-35-9	6.1	II	1645	Y-Acute toxicity	Rm 524 - Toxic/Irritant (6) DG shelf	Prolabo	Laboratory applications	50g	1	50 g	Mar-08	n/r
Mercury Sulphate	7783-35-9	6.1	II	1645	very toxic by inhalation, in contact with skin and if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Prolabo	Laboratory applications	50g	1	50g	Mar-08	req
Phenylmethylsulphonyl fluoride (PMSF) (#52332)	329-98-6	6.1	II	2928	Y - Toxic if swallowed. Causes burns.	Rm 524 - Toxic/Irritant (6) DG shelf	Calbiochem	Laboratory applications	25g	1	25g	Mar-10	Req
Phenylmethylsulphonyl fluoride (PMSF) (#P7626)	329-98-6	6.1	II	2928	Y - Toxic if swallowed. Causes burns.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	25g	1	25g	Mar-10	Req
Phenylmethylsulphonyl fluoride (PMSF) (P1525)	329-98-6	6.1	II	2928	Y - Toxic if swallowed. Causes burns.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	100mg	1	100mg	Mar-10	Req
Potassium chromate	7789-00-6	6.1	II	3288	Avoid inhalation and skin & eye contact	Rm 524 - Toxic/Irritant (6) DG shelf	UNIVAR	laboratory reagent	500g	1	500 g	May-08	n/r
Sodium arsenate	10048-95-0	6.1	II	1685	Yes, toxic	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	laboratory reagent	500g	1	500 g	Jul-07	n/r
Sodium arsenite	7784-46-5	6.1	II	2027	Yes, toxic	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	laboratory reagent	500g	1	500 g	Jul-07	n/r
Sodium azide	26628-22-8	6.1	II	1687	Yes, toxic	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	25g	0	0g	Nov-09	n/r
Sodium azide	26628-22-8	6.1	II	1687	Yes, toxic	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	100g	0	0g	Nov-09	n/r
Sodium azide	26628-22-8	6.1	II	1687	Yes, toxic	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	500g	1	500 g	Nov-09	n/r
Sodium cacodylate	124-65-2	6.1	II	1688	Yes, toxic	Rm 524 - Toxic/Irritant (6) DG shelf	Alltech	laboratory reagent	100g	1	100 g	n/a	n/r
Tunicamycin	11089-65-9	6.1	II	3462	Y (very toxic when swallowed)	Rm 524 - Toxic/Irritant (6) DG shelf	Boehringer Mannheim	Laboratory reagent	5mg	1	5mg	Jun-09	n/r

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1,10-Phenanthroline monohydrate (P9375)	5144-89-8	6.1	III	2811	Y - Toxic if swallowed. Very toxic to aquatic organisms.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	5g	1	5g	Mar-10	Reg
1,4-Phenylenediamine dihydrochloride (P1519)	624-18-0	6.1	III	1673	Y - Toxic by inhalation, in contact with skin and if swallowed. Very toxic	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	25g	1	25g	Aug-09	Reg
3-Amino-9-ethylcarbazole (AEC) (A6926)	132-32-1	6.1	III	2811	Y - May cause cancer. Toxic if swallowed.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	50 tablets	2	100 tablets	Mar-10	Req
Acrylamide	79-06-1	6.1	III	2074	Y - toxic by inhalation, in contact with skin and if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	LKB	laboratory reagent	250g	1	250 g	Apr-05	n/r
Adenine (A8626)	73-24-5	6.1	III	2811	Y - Harmful if swallowed.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	5g	2	10g	Mar-10	n/r
AEC tablets	132-32-1	6.1	III	2811	Y - toxic if swallowed. Irritating to eyes, respiratory system, skin.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	50 tablets	1	50 tablets	Nov-09	n/r
AEC tablets	132-32-1	6.1	III	2811	Y - toxic if swallowed. Irritating to eyes, respiratory system, skin.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	50 tablets	2	100 tablets	Nov-09	n/r
Barbitone (27283)	144-02-5	6.1	III	2811	Y harmful	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	Laboratory reagent	500	1	500 ml	May-08	n/r
Cadmium chloride (#837)	7790-78-5	6.1	III	2570	very toxic by inhalation. May cause cancer. May impair fertility.	Rm 524 - Toxic/Irritant (6) DG shelf	Ajax	Laboratory reagent	100 g	2	200 g	Aug-07	n/r
Cadmium chloride hemi(pentahydrate) (C5081)	7790-78-5	6.1	III	2570	very toxic by inhalation. May cause cancer. May impair fertility.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory reagent	100 g	1	100 g	Feb-06	n/r
Carbazole (#27640)	86-74-8	6.1	III	2811	Y - Harmful if swallowed.	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	Laboratory applications	100g	1	100g	Mar-07	Req
Chloroform #10077	67-66-3	6.1	III	1888	Y, Flammable liquid, Poison	Rm 524 - flammable liquid cabinet	B???? Chemicals	Laboratory reagent	2.5L	1	2.5 L	Jan-10	n/r
Chloroform #152-2.5L	67-66-3	6.1	III	1888	Y, Flammable liquid, Poison	Rm 524 - flammable liquid cabinet	AJAX FINECHEM	Laboratory reagent	2.5L	1	2.5 L	Jan-10	n/r
Chloroform (C2432)	67-66-3	6.1	III	1888	Y, Flammable liquid, Poison	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory reagent	500mL	3	1.5 L	Feb-09	n/r

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Copper (II) Sulphate	7758-99-8	6.1	III	2811	Y	Rm 524 - Toxic (6) DG shelf	AJAX	Laboratory reagent	500g	1	500g	Jul-07	n/r
Copper (II) Sulphate	7758-99-8	6.1	III	2811	Y	Rm 524 - Toxic (6) DG shelf	BDH	Laboratory reagent	500g	1	500g	Jul-07	n/r
Lead citrate	512-26-5	6.1	III	2291	Yes. Harmful by ingestion and inhalation.	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	laboratory reagent	250g	1	250 g	Sep 06	n/r
Lead citrate (#1585290)	512-26-5	6.1	III	2291	Y - Major hazard is due to cumulative effects of lead.	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	Laboratory applications	250g	1	250g	Sep-06	Req
Levamisole hydrochloride (L9756)	16595-80-5	6.1	III	2811	Yes. Toxic if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma Aldrich	Laboratory reagent	2g	1	2 g	Jul 07	n/r
Levamisole hydrochloride (L9756)	16595-80-5	6.1	III	2811	Y - Toxic if swallowed.	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory applications	2g	1	2g	Mar-10	req
Levamisole hydrochloride (L9956)	16595-80-5	6.1	III	2811	Yes. Toxic if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma Aldrich	Laboratory reagent	10g	1	10 g	Jul 07	n/r
Manganese chloride (10152)	7773-01-5	6.1	III	3288	Y - Harmful if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Analar	Laboratory reagent	500 g	1	500 g	Jan-09	n/r
Manganous chloride #10152	13446-34-9	6.1	III	3288	Y-acutely toxic, Harmful	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	Laboratory applications	500g	1	500 g	Nov-07	n/r
N-(1-Naphthyl)ethyl-enediamine (18H0781)	1465-25-4	6.1	III	2811	Y - harmful if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory reagent	10g	1	10 g	Jan-05	n/r
N-(1-Naphthyl)ethyl-enediamine (96H05821)	1465-25-4	6.1	III	2811	Y - harmful if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory reagent	10g	1	10 g	Jan-05	n/r
Nickle chloride (104F3456)	7718-54-9	6.1	III	3288	Y - toxic if swallowed	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	laboratory reagent	100g	1	1	Jul-05	n/r
phenylhydrazine hydrochloride (G53194)	59-88-1	6.1	III	2811	Y - May cause cancer	Rm 524 - Toxic/Irritant (6) DG shelf	May and Baker	Laboratory reagent	100 g	1	100 g	Jan-09	n/r
p-nitrophenol (102465)	100-02-7	6.1	III	1663	Y - Harmful by inhalation	Rm 524 - Toxic/Irritant (6) DG shelf	ICN	Laboratory reagent	250 g	1	250 g	Mar-10	n/r

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Sodium Fluoride	7681-49-4	6.1	III	1690	Y, toxic/irritant	Rm 524 - General chemicals	AJAX	Laboratory reagent	500g	2	1000 g	Sep-09	n/r
Sodium Fluoride	7681-49-4	6.1	III	1690	Y, toxic/irritant	Rm 524 - General chemicals	Sigma	Laboratory reagent	100g	1	100 g	Sep-09	n/r
Theophylline	58-55-9	6.1	III	2811	Y	Rm 524 - Toxic/Irritant (6) DG shelf	sigma	Laboratory reagent	50g	3	150 g	Jan-09	n/r
Thimersol	54-64-8	6.1	III	2025	Y	Rm 524 - Toxic/Irritant (6) DG shelf	Sigma	Laboratory reagent	10g	1	10g	Mar-09	n/r
Thimersol	54-64-8	6.1	III	2025	Y	Rm 524 - Toxic/Irritant (6) DG shelf	BDH	Laboratory reagent	5g	1	5g	Mar-09	n/r
Iodoacetic acid (30331)	64-69-7	8	I	2923	Y-toxic if swallowed, causes severe burns	Rm 524 - Corrosive (8) DG shelf	Riedel-de Haen	laboratory reagent	25g	1	25g	Aug-08	n/r
Trifluoroacetic acid	76-05-1	8	I	2699	Y - Harmful	Rm 524 - Corrosive (8) DG shelf	Pierce	Laboratory reagent	1 g	30	30 g	May-07	n/r
Trifluoroacetic acid (299537)	76-05-1	8	I	2699	Y - Causes severe burns	Room 524 - IIRC corrosive cabinet	Sigma	Laboratory reagent	100 ml	1	100 ml	Apr-10	n/r
Trifluoroacetic acid	76-05-01	8	I	2699	Y - Causes severe burns	Rm 524 - Corrosive (8) DG shelf	Pierce	Laboratory reagent	1 g	10	10g	May-07	n/r
Trifluoroacetic acid	76-05-01	8	I	2699	Y - Causes severe burns	Rm 524 - Corrosive (8) DG shelf	Pierce	Laboratory reagent	1 ml	10	10ml	May-07	n/r
Acetic acid (JJ0011)	64-19-7	8	II	2789	Y - Flammable; causes burns	Room 524 - IIRC corrosive cabinet	Fronine	Laboratory reagent	2.5 L	1	2.5 L	Jul-09	n/r
Acetic acid 100 %	64-19-7	8	II	2789	Yes. Causes severe burn	PRG Rm524 Acid cabinet	AnalaR	Laboratory reagent	500ml	1	500 ml	Jun-08	n/r
Acetic acid glacial	64-19-7	8	II	2789	Yes. Causes severe burn	PRG Rm524 Acid cabinet	Unilab/Ajax chemicals	Laboratory reagent	500ml	1	500 ml	Jun-08	n/r
Acetic anhydride (a6404)	108-24-7	8	II	1715	Y - Causes burns	Room 524 - IIRC corrosive cabinet	Sigma	Laboratory reagent	250 ml	1	250 ml	Apr-10	n/r

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Cobalt chloride hexahydrate	7791-13-1	8	II	3260	Y	Rm 524 - Corrosive (8) DG shelf	Sigma	Indicator, reagent	25g	1	25 g	Jul-07	n/r
cobalt chloride hexahydrate	7791-13-1	8	II	3260	Y	Rm 524 - Corrosive (8) DG shelf		Indicator, reagent	25g	1	25 g	Jul-07	n/r
Ethylenediamine (39108-5)	107-15-3	8	II	1604	Y - Flammable. Causes burns. Harmful in contact with skin and if	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory applications	100mL	1	100mL	Mar-10	Req
Ethylenediamine or 1,2-ETHYLENEDIAMINE or DIMETHYLENEDIAMINE	107-15-3	8	II	1604	Y, corrosive irritant	Rm 524 - Corrosive (8) DG shelf	Aldrich	Laboratory reagent	100mL	1	100mL	Oct-07	n/r
Gold chloride trihydrate	16961-25-4	8	II	3260	Y - Burns	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	5 g	1	5 g	Feb-10	n/r
Gold chloride trihydrate (G4022)	16961-25-4	8	II	3260	Y - Burns	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	5g	1	5 g	Feb-10	n/r
Hydrochloric acid (1367-2.5 L)	7647-01-0	8	II	1789	Y - Causes burns	Room 524 - IIRC corrosive cabinet	Ajax	Laboratory reagent	2.5 L	1	2.5 L	Mar-10	n/r
Hydrochloric acid (AC07332500)	7647-01-0	8	II	1789	Y - Causes burns	Room 524 - IIRC corrosive cabinet	Scharlau	Laboratory reagent	2.5 L	1	2.5 L	Mar-10	n/r
Hydrochloric acid 37%	7647-01-0	8	II	1789	Yes. Causes burn and irritation to respiratory system	PRG Rm524 Acid cabinet	AnalaR	Laboratory reagent	2.5L	2	5 L	Nov-06	n/r
Hydroxylamine hydrochloride	5470-11-1	8	II	2923	Y - Explosive carcinogen	Rm 524 - General chemicals	Aldrich	Laboratory reagent	100 g	1	100 g	Mar-05	n/r
Hydroxylamine Hydrochloride #152528	5470-11-1	8	II	2923	Y, Explodes when heated, Crossive, Toxic	Rm 524 - Corrosive (8) DG shelf	ICN Biochemical	Laboratory reagent	250 ml	1	250 ml	Mar-05	n/r
Natrium hydroxide (0.0002% K)	1310-73-2	8	II	1823	Yes, Causes severe burns	PRG Rm524 Acid cabinet	Merck	Laboratory reagent	250g	1	250 g	May-07	n/r
Potassium hydroxide	1310-58-3	8	II	1813	Y - Harmful burns	Rm 524 - Corrosive (8) DG shelf	Sigma	laboratory reagent	250 g	1	250 g	Jul-07	n/r
Potassium hydroxide	1310-58-3	8	II	1813	Y - Harmful burns	Rm 524 - Corrosive (8) DG shelf	Ajax	laboratory reagent	500 g	3	1.5 kg	Jul-07	n/r

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potassium hydroxide	1310-58-3	8	II	1813	Corrosives	Rm 524 - Corrosive (8) DG shelf	Sigma	laboratory reagent	250g	1	250 g	Apr-06	n/r
Potassium hydroxide	1310-58-3	8	II	1813	Corrosives	Rm 524 - Corrosive (8) DG shelf	Ajax	laboratory reagent	500g	1	500 g	Apr-06	n/r
Potassium hydroxide	1310-58-3	8	II	1813	Corrosives	Rm 524 - Corrosive (8) DG shelf	Ajax	laboratory reagent	500g	1	500 g	Apr-06	n/r
Potassium hydroxide	1310-58-3	8	II	1813	Corrosives	Rm 524 - Corrosive (8) DG shelf	Ajax	Laboratory reagent	500g	1	500 g	Apr-06	n/r
Potassium hydroxide (Pellet)	1310-58-3	8	II	1813	Yes, Causes burn	PRG Rm524 Acid cabinet	M&B	Laboratory reagent	500g'	1	500 g	Jun-08	n/r
Potassium hydroxide (Pellet)	1310-58-3	8	II	1813	Yes, Causes burn	PRG Rm524 Acid cabinet	Ajax finechem	Laboratory reagent	500g'	1	500 g	Jun-08	n/r
Sodium hydroxide (Pellet)	1310-73-2	8	II	1823	Yes, Causes severe burns	PRG Rm524 Acid cabinet	Sigma	Laboratory reagent	500 g	1	500 g	May-07	n/r
Sodium hydroxide flakes	1310-73-2	8	II	1823	Y, corrosive (should be on corr. shelf?)	Rm 524 - Corrosive (8) DG shelf	M&B	Laboratory reagent	1 kg	1	1000 g	Sep-08	n/r
Sodium hydroxide pellets	1310-73-2	8	II	1823	Y,corrosive,burns	Rm 524 - Corrosive (8) DG shelf	AJAX	Laboratory reagent	500g	1	500 g	Jan-10	n/r
Sodium Hydroxide Pellets (#482)	1310-73-2	8	II	1823	Corrosive - causes severe burns	Rm 524 - Corrosive (8) DG shelf	AJAX	Laboratory Reagent	500 g	1	500g	Jan-07	n/r
Sodium hydroxide solution (1N) (1M)	Mixture (1310-73-2 and 7732-18-5)	8	II	1824	Yes. Causes respiratory tract, eye and skin burns.	PRG Rm524 Acid cabinet	BDH chemicals	Laboratory reagent	1L	1	1 L	Sep-08	n/r
sodium sulphide	1313-82-2	8	II	1849	Y	Rm 524 - Corrosive (8) DG shelf	Sigma	laboratory reagent	500 g	0	0 g	Feb-07	n/r
Sulfuric acid	7664-93-9	8	II	1830	Y - Causes severe burns	Room 524 - IIRC corrosive cabinet	Ajax	Laboratory reagent	2.5 L	1	2.5 L	Jan-10	n/r
TCEP (tris-(2-carboxyethyl)phosphine, hydrochloride) (T-2556)	51805-45-9	8	II	3261	Y - causes burns	Rm 524 - Corrosive (8) DG shelf	Molecular Probes	Laboratory applications	1g	1	1g	Feb-08	

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Trichloroacetic acid	76-03-9	8	II	1839	Y - Burns	Rm 524 - Corrosive (8) DG shelf	Ajax	Laboratory reagent	500 g	1	500 g	Jul-07	n/r
Trichloroacetic acid	76-03-9	8	II	1839	Y - Burns	Rm 524 - Corrosive (8) DG shelf	BDH	Laboratory reagent	500 g	1	500 g	Jul-07	n/r
Triethylamine	121-44-8	8	II	1296	Yes, Highly flammable, Causes burn	PRG Rm524 Acid cabinet	Sigma	Laboratory reagent	500 ml	1	500 ml	May-07	n/r
Formic acid (IL#33015)	64-18-6	8	II	1779	Y - Causes burns; flammable	Room 524 - IIRC corrosive cabinet	Riedel de Haen	Laboratory reagent	1000 ml	1	1000 ml	Apr-10	n/r
Trichloroacetic acid	76-03-09	8	II	1839	Y	Rm 524 - Corrosive (8) DG shelf	BDH	Laboratory reagent	500g	1	500g	Jun-06	n/r
Trichloroacetic acid	76-03-09	8	II	1839	Y	Rm 524 - Corrosive (8) DG shelf	APS Ajax	Laboratory reagent	500g	1	500g	Jun-06	n/r
Ammonium hydroxide (5.0 N) Solution	1336-21-6	8	III	2672	Yes, Causes burn	PRG Rm524 Acid cabinet	Sigma	Laboratory reagent	500 ml	1	500 ml	Oct-09	n/r
Butylated hydroxytoluene (B-1378)	128-37-0	8	III	2430	Xn. Harmful if swallowed. Irritating to eyes, respiratory system and skin	Rm 524 - Corrosive (8) DG shelf	Stansens	Laboratory reagent	500 g	500g	500 g	Mar-10	n/r
Butyric Acid 99+% (B10350-0)	107-92-6	8	III	2820	Causes burns	Rm 524 - Corrosive (8) DG shelf	Aldrich	Laboratory reagent	100 ml	1	100 ml	Feb-06	n/r
Chloramine T	7080-50-4	8	III	3263	Y - Harmful if swallowed. Contact with acids liberates toxic gas	Rm 524 - Corrosive (8) DG shelf	May & Baker	Laboratory applications	500g	1	500g	Jun-06	Req
Copper (I) Chloride	7758-89-6	8	III	2802	Y	Rm 524 - Corrosive (8) DG shelf	Aldrich	Laboratory reagent	10g	1	10g	Feb-06	n/r
Ethanol amine	141-43-5	8	III	2491	Y - Burns	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	500 ml	1	500 ml	Jul-07	n/r
Ethanol amine	141-43-6	8	III	2491	Y - Burns	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	100 ml	1	100 ml	Jul-07	n/r
Ethanolamine (Cat #E-9508)	141-43-5	8	III	2491	Y, corrosive irritant	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	100mL	1	100mL	Jul-07	n/r

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Ferric chloride	7705-08-0	8	III	1773	Y	Rm 524 - Corrosive (8) DG shelf	Fluka	Laboratory reagent	250 g	1	250g	Mar-06	n/r
Folin & Ciocalteu's phenol reagent	7732-18-5, 10377-48-7, 10712-10-2 & 64-19-7 & 92-43-3 & 7732-18-5	8	III	3264	Yes, Causes burn	PRG Rm524 Acid cabinet	Sigma	Laboratory reagent	500 ml	2	1000 ml	May-08	n/r
G153 - Part B - Developer for Curix 60	7732-18-5	8	III	2790	Harmful if swallowed. May cause irritation to the mouth, throat and stomach.	Rm 524 Under sink in PC1	AGFA-GEVAERT LTD	Photographic chemical developer	250mL	1	250mL	Mar-05	n/r
Hexadecyltrimethylammonium bromide	57-09-0	8	III	3077	Y - Harmful	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	100 g	1	100 g	Jun-07	n/r
Imidazol (Imidazole) (4716)	288-32-4	8	III	3263	Y-harmful if swallowed, causes burns.	Rm 524 - Corrosive (8) DG shelf	Merck	laboratory reagent	250g	1	250g	Jun-07	n/r
Iron (III) chloride	7705-08-0	8	III	1773	Y - Harmful	Rm 524 - Corrosive (8) DG shelf	Fluka	Laboratory reagent	250 g	1	250 g	Jul-07	n/r
Orthophosphoric Acid	7664-38-2	8	III	1805	Y	Rm 524 - Corrosive (8) DG shelf	BDH	laboratory reagent	500ml		500 ml	Nov-09	n/r
Orthophosphoric acid (AC07332500)	7664-38-2	8	III	3454	Y - Causes burns	Room 524 - IIRC corrosive cabinet	Ajax	Laboratory reagent	500 ml	1	500 ml	Apr-10	n/r
Stannous chloride (96529)	7772-99-8	8	III		Corrosive, causes burns	Rm 524 - Corrosive (8) DG shelf	Sigma Aldrich Pty Ltd	Laboratory reagent	100g	1	100g	Jan-09	n/r
Thymol	89-83-8	8	III	3261	Y	Rm 524 - Corrosive (8) DG shelf	BDH	Laboratory reagent	100g	1	100g	Oct-09	n/r
Tin (II) chloride dihydrate	10025-69-1	8	III	3260	Y - Harmful burns	Rm 524 - Corrosive (8) DG shelf	Fluka	Laboratory reagent	250 g	1	250 g	Dec-08	n/r
Zinc chloride (2-0152)	7646-85-7	8	III	2331	Corrosive	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	100 g	1	100 g	Jul-07	n/r
Zinc chloride (2-3500)	7646-85-7	8	III	2331	Corrosive	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	250 g	1	250 g	Jul-07	n/r
Zinc choride	7646-85-7	8	III	2331	Y - Harmful	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	100 g	1	100 g	Jul-07	n/r

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Zinc choride	7646-85-7	8	III	2331	Y - Harmful	Rm 524 - Corrosive (8) DG shelf	Sigma	Laboratory reagent	250 g	1	250 g	Jul-07	n/r
JB4 embedding solution	None	9	II	3316	Y, Irritant to skin and eyes, harmful if inhaled and absorbed through skin.	Rm 524 - Miscellaneous (9) DG shelf	Polysciences Inc	Laboratory reagent	50 mL	1	50 mL	Aug-08	n/r
Carbazole (#27640)	86-74-8	9	III	3077	Harmful if swallowed. Irritating to eyes, respiratory system and skin.	Rm 524 - Miscellaneous (9) DG shelf	BDH	Laboratory reagent	500 g	1	500 g	Feb-06	Req
CEDAR WOOD OIL	8000-27-9	9	III	3082	Y, Flammable liquid, Toxic	Rm 524 - Miscellaneous (9) DG shelf	TOWNSON & MERCER	Microscopy	120ml	1	120 ml	Sep-08	n/r
CEDAR WOOD OIL	8000-27-9	9	III	3082	Y, Flammable liquid, Toxic	Rm 524 - Miscellaneous (9) DG shelf	Unknown	Microscopy	100ML	1	100 ml	Sep-08	n/r
COATASIL #2293	1717-00-6	9	III	3082	Y, Corrosive, Poison	Rm 524 - Miscellaneous (9) DG shelf	AJAX FINECHEM	Laboratory reagent	500ml	1	500 ml	Nov-05	n/r
Crystal violet	548-62-9	9	III	3077	Y - Hazardous to the environment.	Rm 524 - Miscellaneous (9) DG shelf	Sigma (C-3386)	Laboratory reagent	100g	1	100 g	Jul-09	n/r
Crystal violet	548-62-9	9	III	3077	Y - Hazardous to the environment.	Rm 524 - Miscellaneous (9) DG shelf	Difco (8135-13)	Laboratory reagent	25g	1	25 g	Jul-09	n/r
Crystal violet	548-62-9	9	III	3077	Y - Hazardous to the environment.	Rm 524 - Miscellaneous (9) DG shelf	George T. Gurr (16635)	Laboratory reagent	25g	1	25 g	Jul-09	n/r
Crystal violet	548-62-9	9	III	3077	Y - Hazardous to the environment.	Rm 524 - Miscellaneous (9) DG shelf	Aldrich (86,099-9)	Laboratory reagent	100g	1	100 g	Jul-09	n/r
Crystal violet	548-62-9	9	III	3077	Y - Hazardous to the environment.	Rm 524 - Miscellaneous (9) DG shelf	Sigma	Laboratory reagent	25g	1	25 g	Jul-09	n/r
di-n-Butyl phthalate Cat: 28073	84-74-2	9	III	3082	Y-May be harmful to eyes, skin, or if swallowed	Rm 524 - Miscellaneous (9) DG shelf	BDH	Laboratory reagent	500 mL	1	500 mL	Nov-09	n/r
Malachite Green Oxalate	2437-29-8	9	III	3077	Reproductive toxicity, R22 Acute toxicity if swallowed, R41	Rm 524 - Miscellaneous (9) DG shelf	Merck 1398	laboratory reagent	100g	1	100 g	Dec-09	n/r
Manganese sulphate	10034-96-5	9	III	3077	Y- Health hazard by prolonged exposure	Rm 524 - Miscellaneous (9) DG shelf	Univar	Laboratory reagent	454 g	1	454 g	Mar-10	n/r

Chemical Name	C.A.S. Number	DG class	Packing Grp. I, II, III	U.N. Number	Hazardous in accordance with NOHSC? Y or N <i>note the main hazard</i>	Exact Location	Manufacturer	Uses	Pack Size	No. of packs	Total Quantity	MSDS < 5yrs old { date }	**RA is n/a; n/r; Req.
Manganese sulphate monohydrate	10034-96-5	9	III	3077	Y-Harmful	Rm 524 - Miscellaneous (9) DG shelf	Univar	laboratory reagent	1lb	1	450 g	Jun-09	n/r
Nonidet P40 (Triton X-100) (19628)	9002-93-1	9	III	3082	Y - Harmful if swallowed	Rm 524 - Miscellaneous (9) DG shelf	USB	Laboratory reagent	500 ml	1	500 ml	Oct-09	n/r
Oil of cedar wood #36060	8000-27-9	9	III	3082	Y, Flammable liquid, Toxic	Rm 524 - Miscellaneous (9) DG shelf	BDH Chemicals	Microscopy	500ml	1	500 ml	Sep-08	n/r
Zinc sulfate (8880)	7446-20-0	9	III	3077	Irritant	Rm 524 - Miscellaneous (9) DG shelf	Mallinckrodt	Laboratory reagent	1 lb	1	450 g	May-08	n/a
Zinc sulphate (1640)	7446-20-0	9	III	3077	Irritant	Rm 524 - Miscellaneous (9) DG shelf	M&B	Laboratory reagent	500 g	1	500 g	Jan-06	n/a
Zinc sulphate (30703)	7446-20-0	9	III	3077	Irritant	Rm 524 - Miscellaneous (9) DG shelf	Univar	Laboratory reagent	1 lb	1	450 g	Jan-06	n/a
Haematoxylin (H9627)	517-28-2	9	n/a	n/a	Irritating to eyes, respiratory system and skin	Rm 524 - Miscellaneous (9) DG shelf	Sigma Aldrich Pty Ltd	Laboratory applications	25 g	1	25 g	Feb-10	n/r
Methyl green	7114-03-6	9	n/a	n/a	Y - Irritating to eyes, respiratory system and skin	Rm 524 - Miscellaneous (9) DG shelf	Difco	Laboratory applications	10g	1	10g	Jan-09	n/r
Methyl green	7114-03-6	9	n/a	n/a	Y - Irritating to eyes, respiratory system and skin	Rm 524 - Miscellaneous (9) DG shelf	Gurr microscopy	Laboratory applications	25g	1	25g	Jan-09	n/r
Methylene blue (M9140)	7220-79-3	9	n/a	n/a	Y - Harmful if swallowed, irritating to eyes	Rm 524 - Miscellaneous (9) DG shelf	Sigma Aldrich Pty Ltd	Laboratory applications	25g	1	25g	Feb-10	n/r
Methylene blue trihydrate	122965-43-9	9	n/a	n/a	Y - Harmful if swallowed	Rm 524 - Miscellaneous (9) DG shelf	ICN Biomedicals	Laboratory applications	25g	1	25g	Aug-09	n/r
Methylglyoxal solution	78-98-8	9	n/a	n/a	Y - Harmful if swallowed, irritating to eyes	Rm 524 - Miscellaneous (9) DG shelf	Sigma Aldrich Pty Ltd	Laboratory applications	100mL	1	100mL	May-09	n/r
Mixed bed resin (M8032)	69011-20-7	9	n/a	n/a	Y - Irritating to eyes, respiratory system and skin	Rm 524 - Miscellaneous (9) DG shelf	Sigma Aldrich Pty Ltd	Laboratory applications	100g	1	100g	Oct-09	n/r
Molybdenum trioxide	1313-27-5	9	n/a	n/a	Y - Irritant/Harmful if swallowed or with prolonged exposure	Rm 524 - Miscellaneous (9) DG shelf	Ajax	Laboratory applications	500g	1	500g	Nov-07	n/r

**APPENDIX D OHS503 - Protocol for Chemical Waste Store LG41, Faculty of
Science, Engineering, Medicine and the CCIA**

Authorised by: Adam Janssen, Manager OHS Unit 27 Jan 2010
Effective date: 27 Jan 2010
Current version: V1.1_19 Feb 2010
Dates of previous versions: V1.0_27 Jan 2010
Contact officer/s: Faculty of Science OHS Coordinator, l.islip@unsw.edu.au x58225
Faculty of Medicine OHS Coordinator, m.lavin@unsw.edu.au x58735

Related documents: [Laboratory hazardous waste disposal procedure](#)

1. Purpose – context for development of the protocol

This protocol is to provide instructions for the efficient running of the New Chemical Waste Store LG41 located at E26 on upper campus.

2. Scope – to which positions/groups does the protocol apply

To staff and students of the Biological Science, Wallace Wurth and Lowy Cancer Research buildings who wish to dispose of chemical waste.

3. Definitions and acronyms used

nil

4. Protocol statement

1. Each building/School/Workgroup will have nominated authorised waste store key holders.
2. The chemical and biological waste stores have separate keys and are located on the southern side (rear) of the Bio-sciences building (map reference E26).
3. All waste is to be collected, stored and labelled according to the procedures located at http://www.hr.unsw.edu.au/ohswc/ohs/ohs_waste.html. This is the responsibility of the person(s) generating the waste.
4. Chemical waste request forms must be completed before chemical waste is transferred to the waste store. There are two forms as follows:
 - a. UNSW staff please use the [UNSW Chemical Waste Collection form](#) .
 - b. CCIA staff please use the [CCIA Chemical Waste request form](#) .



5. Please ensure that the Dangerous Goods Class and packing group (to which the chemical belongs) are listed on the form (if applicable). Any packing group I (PG I) items must be double contained in a leak proof container (see photos). Maximum pack size must be less than 5 litres/kilograms. (see key holders for container locations)



6. Completed forms should be faxed to the OHS Unit (x52365). A copy must also be placed in the chemical inventory clipboard in the store; otherwise waste may not be collected. This is the responsibility of the person(s) generating the waste.
7. **At any point in time the inventory on the forms must match the actual contents of the store in case of a chemical incident.**
8. Chemicals (other than Packing Group I Dangerous goods dealt with in item 5 above) must be transported in an appropriate secondary container (see photo examples below). Incompatible chemicals must not be transported together in the same secondary container. For example no toxics with flammables, no acids with alkalis/bases. Secondary containers may be transported together on the one trolley.
9. Only the 15L plastic waste cubes may be transported without secondary



containment

10. All secondary containers must have lids and must be labelled with the dangerous class being transported. Place the relevant Dangerous Goods Class diamond into the plastic sleeve on the container. The waste disposal form must also accompany the containers so that correct identification of chemicals can be made in case of emergencies or



spills.



11. Once the chemicals are at the dangerous goods store they must be placed in their respective dangerous goods cabinets, or marked shelf location. Dangerous goods in glass containers should be placed in their respective cabinets in the first instance then only on open shelves if the cabinets are full. E.g.
 - a. Acids in glass containers should be placed in the acids cabinet on the left in the first instance. Acids in plastic containers should be placed on the marked shelves.
 - b. Acids in glass may be placed on the marked shelves if the acids cabinet is full.
 - c. Bases/Alkali in glass should be placed in the Alkali cabinet (small corrosives cabinet) in the first instance. Alkali in plastic containers should be placed on the marked shelves.
 - d. Bases/Alkali in glass may be placed on the marked shelves if the alkali cabinet is full.
12. A spill kit and PPCE is provided in the waste store should a spill occur. Spill procedures are dealt with separately to this document.
13. The waste store key holders are responsible for ensuring that persons generating waste have complied with the above. This may be done by regular monitoring or spot checks by key holders and OHS Unit personnel.
14. The waste store key holders are responsible for ensuring that people accessing the waste stores know exactly where different types of chemical waste are to be placed. (In other words, Induct people you allow to use the keys and keep a record of that induction).
15. Access to the waste store will be withdrawn for anyone failing to comply with these guidelines.

NOTE: DO NOT place any unlabelled chemical into the waste store as it will not be collected.

5. Roles and responsibilities

OHS Unit is responsible for ensuring the chemical waste contractors pick up and remove waste from this location and for advice on waste removal issues.

Keyholders are responsible for

1. ensuring that all waste is located in the store as per the shelf label locations,
2. that all chemicals are listed on the waste disposal forms,
3. that a copy of the waste disposal form is left in the store clipboard.