NATIONAL GUIDANCE FOR HEALTHCARE WASTE WATER DISCHARGES

Issue date: April 2011

HOSPITALS

CONTENTS

Section 1 INTRODUCTION

1.1 Introduction

The healthcare industry impacts on the lives of nearly every person in the United Kingdom (UK) by providing services performed in medical establishments such as hospitals, health centres, community healthcare, general practitioner (GP) surgeries, dental services, long term care facilities, hospices, pharmacies and veterinary practices.

Waste materials are a by-product of medical activities with establishments generating a vast array of both non-hazardous and hazardous waste streams. The disposal of wastes into water systems is known as ''waste water discharge'' and is subject to conditions and controls set by the UK's twelve Sewerage Undertakers.

1.2 Aim

Healthcare organisations undertake a number of activities that do, or have the potential to, result in the discharge of various items and substances to sewerage systems. This guidance is issued by Water UK to clarify requirements for those waste water discharges. Best practice guidance is given to ensure the most efficient use of water within healthcare sites and to prevent pollution of the UK's sewerage systems.

1.3 Scope

This guidance is the first in a series of publications for the healthcare sector and focuses on HOSPITAL organisations within the United Kingdom of Great Britain, and Northern Ireland (UK).

1.4 Trade Effluent

Discharges from hospitals containing non-domestic waste water constitute 'trade effluent' and such discharges are regulated by the UK's twelve Sewerage Undertakers in their respective geographical regions. In most cases Sewerage Undertakers are the sole regulators in respect of trade effluent discharges.

Installations that require permitting under the Environmental Permitting Regulations may be subject to dual control by the Sewerage Undertakers and the regulatory agencies i.e. Environment Agency (England & Wales), Scottish Environmental Protection Agency and the Northern Ireland Environment Agency. In addition, dual control is also applied in England and Wales for discharges of Special Category Effluent, as prescribed under the Trade Effluent (Processes and Substances) Regulations 1989, 1990 and 1992.

1.5 What is a Trade Effluent Consent?

Where hospitals are discharging more than just domestic sewage a Trade Effluent Consent(s) may be required from the relevant Sewerage Undertaker.

The Consent is a legal document that allows the Sewerage Undertaker to set conditions and limits within the statutory framework outlined in relevant legislation – The Water Industry Act 1991 (England and Wales), The Sewerage (Scotland) Act 1968, The Water and Sewerage Services (Northern Ireland) Order 2006.These conditions and limits are there to protect from harm the sewerage system (drains/sewers), the sewage treatment works and its employees, the general public and the environment.

In addition the Consent allows the Sewerage Undertaker to take samples of the effluent from an agreed discharge point to monitor compliance with the conditions in the consent and to charge for the subsequent carriage and treatment of the effluent.

Failure to comply with the conditions/limits laid out in the Trade Effluent Consent may lead to enforcement action being taken, with the ultimate action being prosecution in the Criminal Court. However, the Sewerage Undertaker would much prefer to work with the discharger in an open and transparent manner rather than take this ultimate action.

These guidelines will assist Hospitals to understand best practice principles and comply with any Trade Effluent Consent that may be issued or required for each discharge point or one covering the whole site/premises. It is the responsibility of the hospital to contact the Sewerage Undertaker to discuss if consent is required.

The Sewerage Undertaker strongly recommends the hospital prepare an emergency plan that includes:

- Spillages.
- Loss of water supply.
- Drainage plans and that those drains are suitably marked and direction of flow indicated. Red for Foul Water Sewer and Blue for Surface Water Sewer.

A frequently occurring factor in pollution incidents is a lack of awareness of the purpose of drains and gullies. On most sites there will be two types of drainage:

1. Surface water drains, which should carry only uncontaminated rainwater from roofs and clean yard areas to watercourse or soakaway. Note: that under some circumstances treatment, such as the use of interceptors, may be required before discharge.

2. Foul drains, which should only carry contaminated water, trade effluent and domestic sewage to a wastewater treatment works.

It is recommended that gullies, grids and manhole covers are colour-coded to aid identification, using blue for surface water and red for foul, together with arrows to indicate the direction of flow. Notices should be used where appropriate and up-to-date drainage plans held on site.

Discharges to the public foul sewer may require formal authorisation by the Sewerage Undertaker and as such may be subject to the terms and conditions of a trade effluent consent or other form of permit. Unless otherwise indicated within this document, where reference is made to disposal to sewer you should always confirm regulatory requirements with your sewerage undertaker prior to making any discharge.

Refer to Environment Agency Pollution Prevention Guidance (PPG) 22 for further detail.

1.6 Format

To aid usage, the document is split by hospital function and/or activity. There is a summary at the end of every section to enable departments responsible for monitoring waste water to determine applicable requirements. A status indicator, operating on the ‘traffic light’ system of green, amber and red is also used within this guidance to indicate the following:

This guidance document does not apply to substances discharged under any other conditions other than a hospital setting.

● **Status Green:** No prohibition on discharge.*

***This indicator has been set on the assumption that the substances discharged are in the quantities or volumes normally used on a day-to-day basis within a general hospital. Bulk quantities should not be discharged without prior discussion with your local sewerage undertaker.**

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

● **Status Red:** Discharge to sewer prohibited.

1.7 Review

This guidance document will be reviewed annually or sooner, following a change of legislation or, in response to queries, changes in processes, chemicals or substances used in the Healthcare sector.

Should you have a query or wish to feedback any issues regarding this document please contact your local Sewerage Undertaker as detailed in section 1.11 below

1.8 Authors & Acknowledgements

United Kingdom's twelve regional Sewerage Undertakers.

Tim Bagnall	Southern Water
Rob Dix	Anglian Water
George Ellen	Scottish Water
Brian Ellor	United Utilities
Penny Walter	Independent Safety Services Limited (ISSL)
Julie Whitelegg	United Utilities
Ian Wilson	Severn Trent
Dave Wiltshire	Thames Water
Dr Anne Woolridge	Independent Safety Services Limited (ISSL)

The review group wishes to thank University College London Hospitals NHS Trust for hosting group meetings and for the cooperation and support of staff members in assisting with the provision of information for this guidance document.

Also thanks to Independent Safety Services Ltd for technical advice and guidance on healthcare waste management in the hospital environment.

1.9 Terminology

See Appendix 1 Glossary

1.10 Legislation/Benchmark Standards

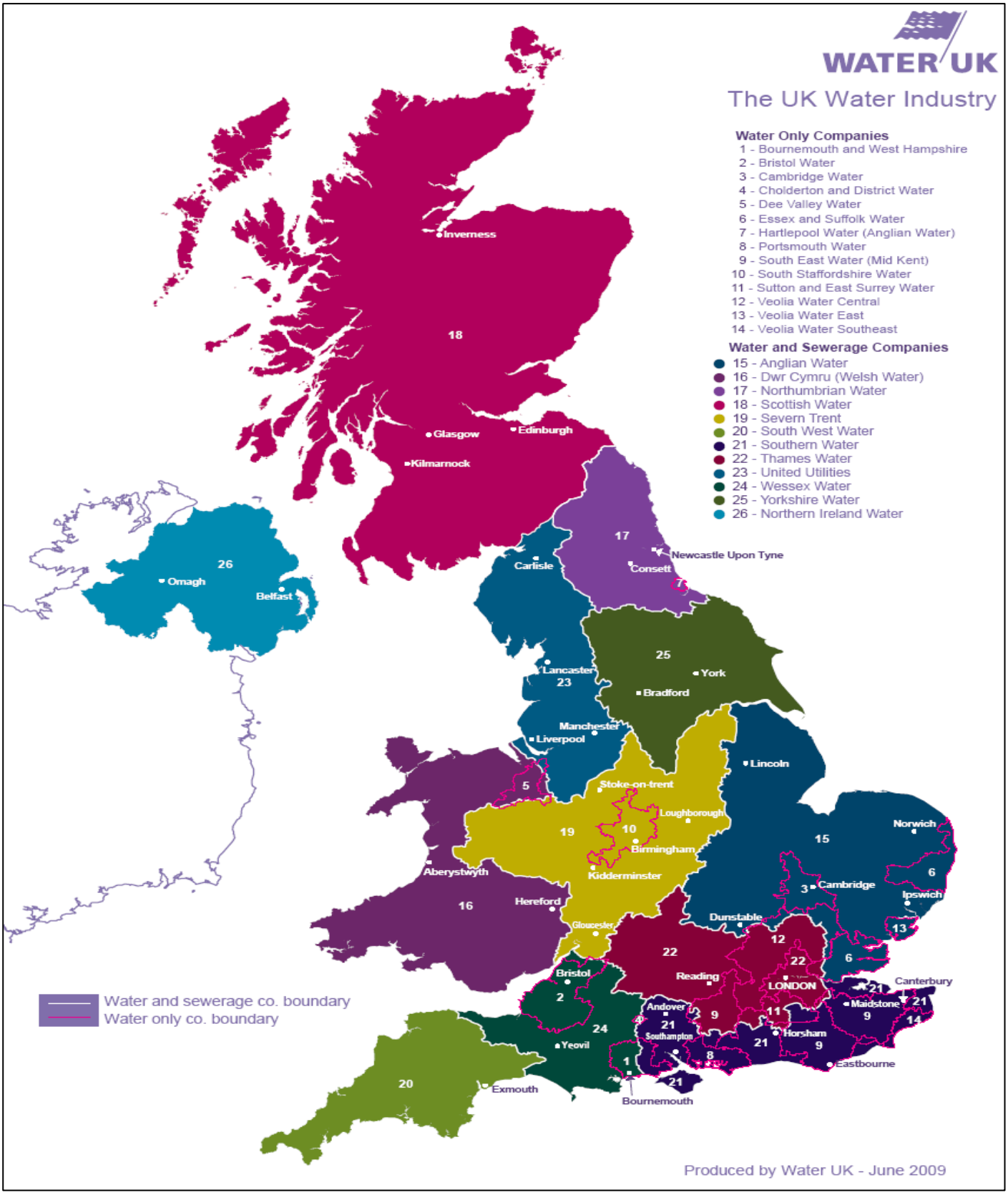
See Appendix 2 Legislation / Benchmark Standards.

1.11 Contacts for UK Sewerage Undertakers

When calling these numbers ask to speak to the TRADE EFFLUENT department.

Anglian Water Services Ltd (Anglian Water Group) www.anglianwater.co.uk	Anglian House Customer Services PO Box 10642 Harlow CM20 9HA Tel: 08457 145145
Dwr Cymru/Welsh Water www.dwrcymru.co.uk	Pentwyn Road Nelson Treharris Mid Glamorgan CF46 6LY Tel: 01443 452 300
Northumbrian Water Group plc www.nwl.co.uk	Abbey Road Pity Me Durham DH1 5FJ Tel: 0870 608 4820
Scottish Water www.scottishwater.co.uk	Castle House 6 Castle Drive Carnegie Campus Dunfirmline KY11 8GG Tel: 0845 601 8855
Severn Trent Water Ltd www.severntrent.co.uk	Severn Trent Centre STC 2 St Johns Street Coventry Tel: 02477 715000
South West Water Ltd(Pennon Group plc) www.southwestwater.co.uk	Peninsula House Rydon Lane Exeter EX2 7HR Tel: 01392 446 688
Southern Water Services Ltd www.southernwater.co.uk	Southern House Yeoman Road Worthing West Sussex BN13 3NX Tel: 01903 264 444
Thames Water Ltd www.thameswater.co.uk	Clearwater Court Vastern Road Reading Berkshire RG1 8DB Tel: 0118 373 8000
United Utilities www.unitedutilities.com	Haweswater House Lingley Mere Business Park Lingley Green Avenue Great Sankey Warrington WA5 3LP Tel: 01925 678173
Wessex Water Services Ltd www.wessexwater.co.uk	Claverton Down Bath BA2 7WW Tel: 01225 526 000
Yorkshire Water Services Ltd (Kelda Group Ltd) www.yorkshirewater.com	Western House Halifax Road Bradford BD6 2SZ Tel: 01274 600 111
Northern Ireland Water www.niwater.com	Westland House Old Westland Road Belfast BT14 6TE Tel:028 9035 4813

1.12 Map detailing UK Water and Sewerage Companies



Section 2 DENTISTRY

2.1 General.

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Dental practices based on hospital sites generate aqueous wastes which are discharged into foul sewer. Typical aqueous wastes generated in dental areas include:

- Mouth rinses.
- Effluent from amalgam separators.
- Anaesthetic liquid from injections.

2.2 Mouth rinses.

Antimicrobial mouth rinses are given to dental patients before and after a dental procedure. The antimicrobial product in the rinses contains ingredients such as chlorhexidine gluconate, essential oils and povidone iodine. In addition to the product ingredients, mouth rinses are contaminated with saliva and sometimes blood. Discharges from dental spittoons must be via an amalgam separator to foul sewer.

- **Status Green:** No prohibition on discharge. *

2.3 Amalgam separators.

Dental amalgams normally contain a mixture of mercury (around 50%) and a number of other metals including silver, tin, copper and zinc. Of particular concern is mercury which is a List I Dangerous Substance under the European Dangerous Substances Directive.

As mercury is both highly toxic and persistent in the aquatic environment it is essential that it is discharged via an amalgam separator and best practice is applied as follows:

- All waste water which can be affected during the handling of amalgam or cleaning by associated equipment must be discharged via a separator.
- The separator must be positioned such that amalgam-bearing flows are intercepted before admixture with domestic and other waste water.
- The separator must be regularly emptied and the waste removed for reclamation by a suitably licensed contractor with relevant waste documentation completed.
- The separator must be regularly serviced.
- Wash basins not connected to the separator must not be used for washing out of equipment associated with amalgam.
- Separators shall be suitably sized for the flow. Several dental units can be connected to it.
- The separator must be connected to the foul drainage system via suitable traps unless the equipment already has such a device.

- **Status Green:** No prohibition on discharge. *

2.4 Anaesthetic liquid from injections.

Dentists administer local anesthetic such as novocaine or lidocaine via an injection to anesthetize both the patient's tooth that will be extracted and the jawbone and gums that surround it. Excess liquid material in syringes should not be discharged into drains but left in the syringe and placed into appropriate yellow lidded sharps box suitable for pharmaceutically contaminated sharps (non cytotoxic/cytostatic).

● **Status Red:** Discharge to sewer prohibited.

2.5 Summary for Dentistry.

- Mouth rinses (with and without saliva and blood contamination) can be discharged to drain/ foul sewer via dental spittoons.
- Amalgam separators must be fitted to all outlets for waste water.
- Excess liquid anesthetic in syringes **must not** be discharged into drains but left in the syringe and should be deposited into appropriate sharps box.

2.6 References / Further Guidance.

- DEFRA (2005) *Guidance for Dentists on Waste Dental Amalgam*. DEFRA
- British Dental Association (2007) *Healthcare Waste Management*, *Advice Note 76*. BDA
- NetRegs (Environment Agency) (2010) *Dental Amalgam*. http://www.netregs.gov.uk/netregs/businesses/92883.aspx
- HTM 07-01 includes a section on dentistry

Section 3 PATHOLOGY / LABORATORY SERVICES

3.1 General.

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Healthcare pathology / laboratory services perform thousands of medical and diagnostic tests on a daily basis. Services include haematology, microbiology, biochemistry, blood bank, serology, virology, surgical pathology, neurology and histopathology.

Functions of laboratory testing are highly varied and involve a number of separate processes. Many processes result in the discharge of waste water or in the generation of waste liquids. This section, in conjunction with the list of chemicals in appendix 3, clarifies which liquid wastes can or cannot be discharged into the foul sewer i.e. down the sink.

3.2 Automated chemical analyser systems.

Automated analyser systems are used to undertake a number of laboratory tests, such as antibody tests, and contain reagent reservoirs and reagents with preservatives.

Many collect waste liquids in plastic reservoir containers as shown below. This waste must not be discharged to the drain but collected by specialist waste contractors for recovery or disposal.

Laboratories discharging any liquids to foul sewer shall note the following requirements listed below:

3.2.1 Reagents

Reagents stain the microorganism in the diagnostic sample. Typical reagents commonly used in departments such as Microbiology include a combination of crystal violet, iodine and neutral red or dilute carbol fuchsia. Disposal of these reagents is via dilution with tap water to foul sewer is permitted by the Sewerage Undertakers.

- **Status Green:** No prohibition on discharge. *

3.2.2 Liquid body fluids.

Liquid body fluids (e.g. bloods or urine) are discharged in small quantities from analysers. The Sewerage Undertakers permit the discharge of bodily fluids to foul sewer under normal working conditions.

- **Status Green:** No prohibition on discharge. *

3.2.3 Preservatives and fixatives.

Laboratories regularly use solvents although the volume of solvent waste is typically small. Small volumes of alcohols and acetones are used to fix or clear materials on glass slides.

Alcohols include methanol (1-2ml per sample) and ethyl alcohol (1-2ml per sample). The solvent acetone is also used as a fixative (1-2ml per sample).

The entry of volatile solvents to the foul sewer is controlled by Sewerage Undertakers in order to maintain safe working atmospheres in man-entry sewers and sewage pumping stations. The volatile solvents commonly used in pathology services have been assessed against a number of criteria including the Occupational Exposure Standard for each substance, the potential for odour nuisance, toxicity to the sewage treatment process and the environment and explosion risk.

Alcohols (including methanol, ethanol, propanol, butanol) and acetone may be safely discharged to foul sewer in small quantities with considerable dilution.

Other solvents used include:

- Halogenated compounds i.e. methylene chloride, chloroform, freon, trichloroethylene and 1,1,1-tricloromethane
- Non-halogenated compounds i.e. xylene, ethanol, isopropanol, toluene, ethyl acetate and acetonitrile.

Of the non-halogenated compounds, petroleum spirit (comprising benzene, toluene, ethyl benzene and xylene known as 'BTEX') is statutorily prohibited from entering sewers. Other substances such as ethyl acetate and acetonitrile fall in between the two extremes represented by alcohols and BTEX and may be discharged to foul sewer with the permission of the Sewerage Undertaker. Refer to appendix 3 for detailed list of chemicals and associated guidance.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

10% formaldehyde solution is used as a preservative i.e. a fixative in Para cytology. It is commonly highly diluted with tap water (1:1000 dilution factors) and discharged to foul sewer/foul sewer.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

3.2.4 Stains.

Hydrochloric acid (1-2%) is used in low dilution with alcohol as part of the Ziel Neelson (ZN) staining process. Strong Carbol Fuchsia 10% is added for Tuberculosis (TB) samples as part of the staining process. Auramin phenol is another stain commonly used. Malachite Green or Methylene blue are also used to counter stains. These solutions can all be discharged to foul sewer with tap water when used in normal laboratory conditions.

● **Status Green:** No prohibition on discharge. *

3.2.5 Laboratory smalls.

Laboratory chemicals in containers of less than 5 litres capacity are normally termed 'laboratory smalls'. Laboratory smalls must be stored in laboratories or dedicated waste chemical stores whilst awaiting collection by contractor. Lab smalls must not be discharged to foul sewer.

● **Status Red:** Discharge to sewer prohibited.

3.2.6 Mercury containing equipment.

It is not uncommon for laboratories to use a range of mercury containing devices such as calibration manometers, water bath thermometers, incubators and refrigeration thermometers. Should these devices break, mercury spills should be collected using mercury spills kits. Mercury and mercury contaminated materials should not be discharged to foul sewer under any circumstances but disposed of as hazardous waste via an authorised and suitably permitted waste contractor.

● **Status Red:** Discharge to sewer prohibited.

3.3 Summary for Pathology Directorate / Laboratory Services.

- Small quantities of reagents and stains are allowed to be discharged to foul sewer with tap water
- Lab smalls, excess alcohol and acetone and other solvents **should not** be washed down the sink but sent for disposal via the waste chemical contractor See Appendix 3
- Mercury shall be collected in a spill kit and disposed of via a suitable waste contractor.

Section 4 PHARMACY

4.1 General.

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Hospital Pharmacy departments supply medication to wards, departments and to patients being discharged from hospital. Thousands of medications are prescribed on a daily basis and administered either orally, by injection, intravenously or applied directly to the affected area. Hospitals generate a significant amount of waste medications made up of used, unused, time expired, surplus stock or faulty medications.

The discharge of medicines and pharmaceutical products into hospital waste water has been the subject of intensive research over the last twenty years. There is well documented evidence to show that the pharmaceutically active products in hospital waste water can be detected in the effluent from sewage treatment works and aquatic ecosystems. Once in the aquatic environment there is the potential for harm to living organisms including humans.

It is imperative that robust waste arrangements are in place to ensure correct disposal of waste medication to prevent the discharge of harmful pharmaceuticals into the environment.

4.2 Pharmaceutical Waste at Ward /Department Level.

UK healthcare waste guidance HTM 07-01: safe management of healthcare waste issued by the Department of Health requires hospital pharmaceutical waste to be segregated into 3 types:

- Cytotoxic / Cytostatic medications. (4.2.1)
- Pharmaceutically active medications. (4.2.2)
- Non-pharmaceutically active medications. (4.2.3)

4.2.1 Cytotoxic / Cytostatic medications.

Medicines classified as 'Cytotoxic / Cytostatic' are those meeting or one or more of the following hazard groups detailed by the Hazardous Waste Regulations (England, Wales & Northern Ireland) or Special Waste Regulations (Scotland) - H6 toxic, H7 Carcinogenic, H10 toxic for reproduction and H11 mutagenic. They are assigned to European Waste Catalogue (EWC) code 18 01 08*. *NB * (asterisk) denotes waste type is an absolute entry as hazardous waste (England/Wales/Northern Ireland) or special waste (Scotland).*

Cytotoxic / cytostatic medications are not permitted to be directly discharged to foul sewer under any circumstances. This includes a prohibition on rinsing medication bottles or blister packs that have contained these medications.

Patient bodily discharges (urine and faeces) containing metabolised medications are permitted to be discharged to foul sewer i.e. via toilet system.

Cytotoxic / cytostatic medications should be disposed of via incineration at suitably permitted sites. Hospitals are recommended to use the better practice waste packaging colour coding as detailed in HTM 07-01 for segregation of cytotoxic / cytostatic medications wastes assigned to European Waste Catalogue (EWC) code 18 01 08*.

● **Status Red:** Discharge to sewer prohibited.

4.2.2 Pharmaceutically active medications.

Medications containing pharmaceutically active ingredients, vaccines, serums, controlled drugs and patient own medications that may be brought onto the hospital site are not permitted to be discharged to foul sewer under any circumstances.

Examples of hazardous properties associated with a number of pharmaceutically active medicines include: H2 (Oxidising), H3A (Highly Flammable), H3B (Flammable), H4 (Irritant), H5 (Harmful), H14 (Ecotoxic). The classification is determined solely by assessment of the medicinal products in the form of the material safety data sheet (MSDS) supplied by the manufacturer or distributor.

The rinsing out of medication bottles or blister packs that have contained pharmaceutically active medication is prohibited. Medications should be disposed of via incineration at suitably permitted sites. Controlled drugs should be denatured in accordance with hospital procedures and in accordance with the Misuse of Drugs regulations as applicable within the UK. Controlled drugs must not be discharged to foul sewer.

Hospitals are recommended to use the better practice colour coding as detailed in the Department of Health HTM 07-01 safe management of healthcare waste for segregation of medications wastes assigned to European Waste Catalogue (EWC) code 18 01 09.

● **Status Red:** Discharge to sewer prohibited.

4.2.3 Non-pharmaceutically active medications

Where prescription only medications are not pharmaceutically active, wastes may be discharged to sink in small quantities (less than 1 litre) provided other pharmaceutically active products have not been added to them.

The term non-pharmaceutically active means a licensed medicinal product that is not pharmaceutically active and possesses no hazardous properties.

Examples include:

- Glucose solution.
- Saline solutions.
- Liquid nutritional feeds and supplements.

● **Status Green:** No prohibition on discharge. *

4.3 Pharmacy Quality Assurance (QA) Departments.

Some hospital sites manufacture or test pharmaceutical products. In many cases the hazardous properties of the product ingredients are not fully known.

Due to the confidentiality for many QA departments, hospitals are advised to contact their regional Sewerage Undertaker to discuss operations and discharges in a commercially confidential environment so a decision can be made regarding discharges.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

4.4 Summary pharmaceutical products and waste.

- Active pharmaceuticals including cytotoxic / cytostatic medications and controlled drugs cannot be discharged to foul sewer; this includes rinsing of medicine bottles.
- It is acceptable to rinse out small amounts of non-pharmaceutically active products to foul sewer.
- Patient bodily discharges (urine and faeces) via the toilet drainage system are also acceptable

4.4 References / Further guidance.

- DEFRA (2005) *The Hazardous Waste Regulations (England and Wales) 2005*. TSO
- DEFRA (2005) *The List of Wastes (England Wales) Regulations 2005*. TSO
- Department of Health (2006*) Health Technical Memorandum 07-01: Safe Management of Healthcare Waste.* TSO

Section 5 STERILE SERVICES DEPARTMENT

5.1 General.

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Many hospitals provide in-house cleaning and decontamination services for medical instruments used within departments such as theatres and outpatients. These units are commonly known as Sterile Services or Sterile Decontamination Units. Hospital Sterile Services departments often manage contracts for disinfecting and sterilising medical instruments from the community sectors.

5.2 Requirement for Sterile Services.

Sterile Service centres generate waste water from two processes:

- Disinfection. (5.3)
- Sterilisation. (5.4)

Wastewater discharges resulting from the above processes include

- Bodily fluids.
- Some tissue matter.
- Disinfectants.

5.3 Disinfection.

Disinfection of medical instruments generally takes place in single chamber washers. These washers generate waste water containing detergent of high pH. The discharged water temperature is high, approximately 90 degrees centigrade.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

5.4 Sterilisation.

Sterilisation machines are fed by clean steam. Up to 220kg of condensate is discharged per cycle. Additional discharges are made from the occasional release of the cooling loop to drain and from the manual cleaning of sinks using pH neutral enzymatic detergents. Ring mains are sanitised using hydrogen peroxide.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

5.5 Medical instrument trolley cleaning.

Hospital sterile services units that have trolley washers to clean trolleys used to transport soiled medical instruments and trays discharge detergent, bodily fluids and some tissue to drain during the cleaning process. Discharge should be in a designated area and shall be to foul sewer.

5.6 Temperature

High temperature discharges can have a detrimental effect within the sewerage system. A limit of 43ºC at the point of connection to the public sewer is typical.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

5.7 Summary for Sterile Services.

- Permission to discharge must be sought from sewerage undertaker

Section 6 ENDOSCOPY

6.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Cleaning of medical instruments including items used in endoscopy typically consists of a number of wash cycles that clean, disinfect and rinse. As well as using chemicals to disinfect (chlorine dioxide) and enzymatic detergents to clean instruments, ultra clean water produced from reverse osmosis (RO) and ion exchange plants may also be used in the rinsing process. Sterilisation can involve the use of steam and therefore high temperatures may be generated.

6.2 Chemicals

Sewerage Undertakers may be concerned about the chemicals used in cleaning and disinfection processes and which will be present in the effluent discharged to foul sewer. In most circumstances these will be well diluted by the quantity of water used in the process and by effluent from other parts of the hospital. However in more rural areas where there may be less dilution from other effluents, these chemicals may have an impact on the sewage treatment process.

6.3 Temperature

High temperature discharges can have a detrimental effect within the sewerage system. A limit of 43ºC at the point of connection to the public sewer is typical.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

6.4 Summary for Endoscopy

- Permission to discharge shall be sought from sewerage undertaker

Section 7 RADIOACTIVE MATERIALS

7.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

The relevant agency (i.e. Environment Agency / SEPA/ NIEA) regulates the disposal of radioactive waste into a sewer or drain under the Radioactive Substances Act 1993. Sewerage Undertakers have no powers to control the radioactive content of any discharge. They therefore cannot impose conditions relating to radioactivity in a consent to discharge to sewer.

In granting the authorisation of a discharge to sewer the relevant agency takes into account the amount and character of the radioactive waste, the proposed route of discharge and the available dilution. This is to ensure that both the public and operational personnel are adequately protected from radiation, even if exposure occurs at the point of discharge to sewer.

The Sewerage Undertaker will provide the relevant regulator with details of the dilution available at the point of entry to sewer, on request.

7.2 Authorisation

The relevant agency will send copies of authorisations for disposal to sewer to both the discharger and the relevant Sewerage Undertaker.

● **Status Amber**: Not regulated by the Sewerage Undertakers – advice shall be sought from the relevant agency i.e. Environment Agency, SEPA, NIEA.

7.3 Summary for Radioactive Aqueous Discharges.

- Radioactive aqueous discharges are not regulated by the Sewerage Undertakers – advice shall be sought from the relevant agency i.e. Environment Agency, SEPA, NIEA.

7.4 References / Further Guidance

Contact Radiation Protection Advisor for your relevant NHS trust

Section 8 RENAL DIALYSIS

8.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Dialysis is used to provide an artificial replacement for kidney function in cases of renal failure.

8.2 Dialysis

Dialysis involves the further purification of mains water which results in the release of concentrated wastewater. The water is treated through a water softener, granulated activated carbon filter, fine particulate filter and reverse osmosis (RO) before being fed into a water loop which feeds the machines.

Technical developments to the water purification and the dialysis machines mean that soon the majority of units will use double pass RO and once a week will routinely purge the water loop system with hot water in excess of 90^{o}C to prevent bacterial slime build up.

● **Status Green:** No prohibition on discharge. *

8.3 Cleaning Cycle Waste

Cleaning cycles take place following dialysis. Various dilute/weak acids (for example citric acid) are used and these chemicals are flushed around within the machine at 85^{o}C and then flushed to drain after cooling.

● **Status Green:** No prohibition on discharge. *

8.4 Backwashing & Recharge

The backwashing and recharge of the various filters, softeners and RO units can give rise to high concentrations of contaminants, particularly in the case of RO units, the impact of which will depend on the scale of the department. Water softener regeneration can give rise to high and low pH wastewater discharges.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

8.5 Summary for Renal Dialysis

- Normal waste arising from the dialysis process and post dialysis washings can be disposed of to foul sewer
- Backwashing and recharge wastes as well as RO waste can only be disposed of to foul sewer if permitted by the sewerage undertaker.

Section 9 INPATIENT & OUTPATIENT SERVICES

9.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

The treatment of patients on a hospital site generates waste water discharges through a variety of activities. This chapter reviews activities and permitted discharges relating to inpatient and outpatient clinical activities.

9.2 Macerated Bed Pans

Macerated bed pans create a papier-mâché type paste in the drains which can coat the inside of sewers and the walls of pumping station wet wells.

There have been incidents of discharges from hospital macerators causing blockages or partial blockages in the public sewer. This causes severe disruption and considerable clean up costs, which may be recovered from the discharger. It is an offence to block or impede the flow in a sewer and, in extreme cases, can lead to the Sewage Undertakers considering preparing a case for a criminal prosecution. It is recommended that hospitals liaise and work together with their local Sewerage Undertakers to discuss these issues in context with the hospital's own network system.

Pictures highlighting the deposit of sewage on domestic properties as a result of sewer blockage caused by the discharge of macerated bed pans.

- **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

9.3 Alcohol gels

Alcohol gels are commonly used on hospital sites. Only gels that do not contain siloxanes[+] and whose Material Safety Data Sheet (MSDS) **does not** prohibit discharge to the sewer, may be rinsed out and the packaging recycled or placed into the domestic waste stream

[+]Siloxanes can cause significant damage to plant and equipment used in the sewage treatment process

- **Status Green:** No prohibition on discharge. *****

9.4 Pharmaceutical products / Medicines

Cytotoxic, cytostatic medication or medications containing pharmaceutically active ingredients, vaccines, serums, controlled drugs and patient own medications that may be brought onto the hospital site are not permitted to be discharged to foul sewer under any circumstances.

The rinsing out of pharmaceutically active or cytotoxic / cytostatic medication bottles or blister packs is prohibited.

● **Status Red:** Discharge to sewer prohibited.

9.5 Summary for Inpatient & Outpatient Services

- Macerated bed pans can cause sewer infrastructure blockages resulting in foul flooding
- Alcohol gels should be disposed of as per data sheet instruction
- Medicines and pharmaceutical substances **must not** be discharged to foul sewer
- Contact sewerage undertaker to discuss if consent is required

9.6 References / Further Guidance.

Section 10 MORTUARY

10.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

The function of mortuaries in the healthcare sector is to store deceased bodies at low temperature waiting for collection from a Funeral Director. Many mortuaries also have facilities to carry out procedures associated with post mortems. The wastewater resulting from any process undertaken in the mortuary should only be discharged to foul sewer

10.2 Body storage

This facility is a refrigerated area where the deceased bodies are stored for identification, collection by Funeral Directors or awaiting a post mortem if required by a Coroner. Typically these cool room areas are cleaned and disinfected periodically, occasionally bodily fluids are secreted which require cleansing and disinfection.

- **Status Green:** No prohibition on discharge. *

10.3 Post mortem

In the post mortem facility bodily fluids, blood and urine, stomach contents and faecal matter may be removed from the body. Essentially the post mortem table and floor is washed with water and disinfected with biocide and virocide and discharges direct to foul sewer. In addition there will be some washing of body parts and organs removed from the corpse for further analysis. The drainage system should have a fine filter installed to prevent any body tissue from being discharged.

- **Status Green:** No prohibition on discharge. *

10.4 Equipment sterilisation

Sterilisation machines are fed by clean steam. Up to 220kg of condensate is discharged per cycle. Additional discharges are made from the occasional release of the cooling loop to drain and from the manual cleaning of sinks using pH neutral enzymatic detergents. Ring mains are sanitised using hydrogen peroxide.

- **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

10.5 Cooling plant discharges

Many large industrial refrigeration plants require the use of water evaporation towers to transfer the waste heat from the cooling system to atmosphere. Often chemicals such as biocides, corrosion inhibitors, scale inhibitors, antifoams and bio-dispersants are used to dose the water to ensure the effective and efficient operation of the tower.

- **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

10.6 Cadaver storage at teaching hospitals

The storage of cadavers at medical schools associated with hospitals use various chemicals to preserve bodies and body parts, usually formaldehyde is used but phenol, methanol and glycerine are also in common use.

When the cadaver is being used for training there will be a loss of preservative and some bodily fluids, which will be washed to sewer.

In addition there will be some disinfection of the dissecting table and cleaning of the instruments all of which will give rise to a waste for disposal to foul sewer. The discharge is acceptable provided levels of formaldehyde do not exceed 100mg/l or 10mg/l phenol at the discharge point to the public foul drainage system

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

10.7 Summary for Mortuary.

- Most discharges from Mortuary processes are acceptable for discharge to the foul sewer. Care should be taken to ensure the levels of disinfectants and preservatives are not excessive.
- For further clarification contact your local sewerage undertaker

Section 11 X-RAY / RADIOGRAPHY

11.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Radiography is used for fast, highly penetrating images, and is usually used in areas with high bone content whilst radiotherapy is a non-imaging application used to treat malignant cancer cells. Radio-contrasting compounds such as barium sulphate are often used to highlight the gastrointestinal tract, arteries or veins in radiography.

Conventional film technology using wet development processes are still in use but are being phased out by digital systems.

Typical X-ray Machine

11.2 Conventional Film

Conventional film requires the use of a developer solution and a fixer solution as part of a number of stages.

1. Development, where the developing agent gives up electrons to convert silver halide grains to metallic silver. Unexposed grains remain as silver halide crystals.
2. Stopping the development, where a stop bath is used stop the process by washing the developer remaining on the film away with water.
3. Fixing, where unexposed silver halide crystals are removed by the fixing bath.
4. Washing, where the film is washed with water to remove all the processing chemicals.

Used solutions should not be discharged to sewer as they contain silver ions. These solutions, along with empty concentrate bottles must be removed from site after use. Washings from the film process should only be discharged to foul sewer.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

11.3 Digital processes

Digital processes do not involve any discharge to sewer.

11.4 Radio Contrasting Compounds

Recovered radio-contrasting compounds such as barium sulphate are usually collected and disposed of separately. They should not be disposed of to sewer as they are very dense and collect in traps and siphons and can cause blockages.

● **Status Red:** Discharge to sewer prohibited.

11.5 Summary for X-Ray /Radiography

- Developing and fixing solutions as well as used radio contrasting compounds must not be disposed of to drain
- Wet film process washings can only be disposed of to drain if permitted by the sewerage undertaker

Section 12 SWIMMING/THERAPY/ BIRTHING POOLS

12.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Hospital sites may have a number of pools which vary in use from birthing pools in maternity wards, those used for therapeutic purposes and, at some larger sites, those associated with health & fitness/sports and social facilities. Discharges from all of these types of pool will at some point need to be made to the foul sewer and should be undertaken in accordance with the following guidance.

12.2 Therapy/Swimming Pools

Swimming pools and some therapy pools will have associated filtration systems to remove contaminant particulate matter from the pool. These filters will be backwashed on a regular basis and the resultant wastewater discharged to foul sewer. Pools will also be emptied periodically to enable maintenance and cleaning work to be undertaken. Discharges from the filter backwashing process may require the consent of the relevant sewerage undertaker.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

12.3 Birthing Pools

The general capacity of water used in a birthing pool is around 450 – 500 litres of tap water. There are no additions of substances to this water during birthing except in some cases when aromatherapy oils are added.

The placenta is not usually delivered in the birthing pool, but episiotomy can be done in or out of the pool. At this point the discharge water only contains those bodily fluids excreted during birth. Additional chemicals are only added during decontamination of the birthing pool post and pre births.

● **Status Green:** No prohibition on discharge. *****

12.4 Summary for Pools

- Discharge to be made to the foul sewer only
- Therapy/Swimming pools Contact Sewerage Undertaker to confirm if permission is required

Section 13 CATERING SERVICES (Restaurants / Kitchens)

13.1 Catering Services

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Catering services provided at hospitals vary with some being largely outsourced while others have extensive kitchens where many meals are cooked and prepared. All hospitals have to deal with waste food.

13.2 Sewer Blockages.

Sewerage Undertakers have experienced increasing numbers of sewer blockages and pollution incidents relating to fat, oil, grease and general food debris. There are approximately 200,000 blockages throughout the UK every year of which 75% are caused by fat, oil and grease. Clearing these blockages costs millions of pounds a year.

Hospital catering facilities can be a significant source of fats, oils and greases if they do not follow best practice in disposing of fats, oils, grease and food waste. If best practice is not followed there is an increased risk of:

- Blockage to hospitals own drainage systems.
- Fat blockages can also result in public health issues such as sewer flooding, odour problems and the risk of rat infestation.
- Extra cost for clean-up.

Best Practice for disposing of fats, oils, grease and food waste:

- Catering staff to have been adequately trained on why it is important to keep fats, oils, grease and food waste out of drains and sewers.
- Food to be scraped of plates, pots and utensils for disposal in the rubbish bin.
- Any grease trap or interceptor to be adequately sized and maintained properly.
- Waste oil to be collected and securely stored clear of all drains.

It is a criminal offence to block a sewer. If the discharge from hospital kitchens causes blockages in the public sewer Sewerage Undertakes will seek to recover the costs of clearing the blockage, under the polluter pays principle, and, this could result in the Sewage Undertakers considering preparing a case for a criminal prosecution.

13.3 Food Waste Macerators

Sewerage Undertakers actively discourage the use of food waste macerators and have been seeking to have their use prohibited. The sewer is not the place to dispose of food waste. The use of food waste macerators will inevitably increase the risk of sewer and drain blockages. It is advisable to discuss the use and operation of food waste macerators with the Sewage Undertakers.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

13.4 Summary for Catering Services.

- Discharge to be made to the foul sewer only
- Best Practice for disposing of fats, oils, grease and food waste should be employed
- Contact Sewerage Undertaker to confirm if permission required

13.5 References / Further Guidance.

- Water UK has produced a guidance document explaining best management practice for catering outlets. This can be downloaded from:- http://www.water.org.uk/home/policy/reports/recycling/fogbrochure

Section 14 LAUNDRY SERVICES

14.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Dependent upon the Healthcare organisation this service can either be supplied and managed by the organisation itself on site or be managed and operated on site by a third party contractor, or the service provided by an off-site contracted organisation.

The processes can be varied dependent upon the type of material/garments to be cleaned, the method of cleaning, for example heavily contaminated requiring sterilising through to dry cleaning and the equipment used.

In all cases discharges shall be to foul sewer and laundry departments shall contact their respective sewerage undertaker to confirm if consent is required.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

14.2 Summary for Laundry Services.

- Laundry services based on hospital sites shall contact the local Sewerage Undertaker to discuss if consent is required.

14.3 References / Further Guidance.

- NHS Health Executive (1995) *HSG (95)18-Hospital Laundry Arrangements For Used And Infected Linen*. BAPS Health Publications.

Section 15 HAIRDRESSING SERVICES

15.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Hairdressing services based on hospital sites, discharge waste water through the hospital's drainage systems.

15.2 Waste water discharges

Product Material Safety Data Sheets (M.S.D.S.) determine that most constituents of hairdressing supplies are non-hazardous, non-toxic and biodegradable. Materials which are identified as hazardous materials include most hair dyes, bleaches, and permanent hair treatment products. When used as instructed discharge to foul sewer is acceptable.

- **Status Green:** No prohibition on discharge. *

15.3 Summary for hairdressing services

- Waste from hairdressing services are considered as domestic waste and disposal to the foul sewer only is acceptable.

Section 16 DOMESTIC / HOTEL SERVICES (CLEANING)

16.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

A number of chemicals are used in the routine cleaning of a hospital. There are material safety data sheets for the products in use and when made up according to the manufacturers instructions. Cleaning solutions will be very similar to household products. Once diluted and used the majority of the dirty liquid will be disposed of down the 'slop hopper'in the cleaners cupboard or the sluice in each of the clinical areas.

Water from mop buckets and steam cleaners are disposed of in the sluice rooms in each of the areas of the hospital.

Assuming all cleaning solutions are used in accordance with the manufacturers instructions they should pose little risk to the sewerage system. All cleaning products should be discharged to the foul sewer and never to surface water drainage.

- **Status Green:** No prohibition on discharge. *

16.2 Summary for domestic and hotel cleaning services

- Waste from domestic and hotel cleaning operations is considered as domestic waste and disposal to the foul sewer only is acceptable

Section 17 TRANSPORT AND AMBULANCE SERVICES

17.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Transportation, such as providing ambulance services, is an essential part of many hospitals activities. Associated with the provision of these services is an ongoing requirement to clean and maintain vehicles. This is often undertaken on the hospital premises and if not properly managed the resultant effluent and run-off from vehicle washing can pollute water courses. Pollutants include dirt, brake dust, traffic film residuals, oils and cleaning agents.

Ambulance being washed and cleaned on a healthcare site

17.2 Vehicle washing

Vehicle washing activities should be carried out in designated washing bays that are clearly marked and isolated from surface water drainage systems, unmade ground and porous surfaces. A designated washing bay should be designed so that run-off is:

- Isolated using channels, gullies, gradient (fall on the surface) and kerbs.
- Directed to a silt trap or settlement tank and/or interceptor in order to remove larger particles of silt and sediment and fuel residues.
- Collected in a sealed system for reuse or for authorised disposal if you do not have permission to discharge from the Sewerage Undertaker.

Healthcare organisations should also:

- Have procedures that cover how and where vehicle washing is undertaken, what cleaning should be carried out and what to do in a spillage emergency.
- Provide notices for designated washing bays stating what they are for and that washing and cleaning should only be carried out within the bay.
- Consider whether a fence or barrier is required to prevent spray or wind drift out of the designated area.
- Have procedures and equipment which minimises water use and solid waste production.

The above guidance should be made available to all contractors and other site users who may undertake vehicle washing on site.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

17.3 Summary for Transport Services

- Discharge must be made to foul sewer only
- Vehicle washing must be carried out in clearly marked, designated wash-bays only
- Discharge must only be made via an interceptor (or similar)
- Contact the local Sewerage Undertaker to discuss if consent is required for Vehicle washing based on hospital sites

17.4 References / Further Guidance.

- Environment Agency (2007) Pollution *Prevention Guidelines: Vehicle Washing and Cleaning (PPG 13)*. Environment Agency

Section 18 ESTATES & MAINTENANCE

18.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Discharges from the operations of the estates and maintenance department will be wide and varied and potentially polluting. In general terms no contaminated discharge should be made to the surface water drainage system and if in doubt contact your local Sewerage Undertaker for clarification if you are not sure.

Best practice arrangements should be administered to ensure minimum risk of pollution.

It is good practice to mark your drainage systems and provide details on up-to-date drainage plans. Red for foul and blue for surface drainage, marking with an arrow in the direction of flow. This information should always be held on site for quick reference as it is extremely useful to the regulatory bodies and Sewerage Undertakers in the event of an on-site incident or spillage and in controlling its escape from site.

Drain marking – red for foul – on a hospital site.

Types of operation and discharge are listed below:

18.2 Flushing of heating and cooling systems

The periodic flushing and cleaning of heating and cooling systems is a key part of any maintenance programme. The process requires the use of aggressive chemicals and high volumes of flushing water. This type of discharge shall only be to foul sewer.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.3 Legionella Control

As with flushing of heating and cooling systems, chemicals are used to ensure the appropriate eradication of Legionella causing microbes, in cooling towers, showers, hot water systems and ornamental water fountains. Chlorine dioxide and other chemicals are usually the preferred chemicals for the treatment. Once the treatment process is completed the effluent must be discharged to foul sewer.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.4 Drain, fat trap and interceptor cleaning

Care should be taken when cleaning drains and traps. It is imperative that waste solid material is not allowed to be deposited into the public drainage system. Excessive solids in the drain will cause it to block, potentially causing localised flooding of your property (or that of your neighbours) with sewage. The solid material removed from the sewer shall be removed off site for disposal at an appropriately licensed facility.

● **Status Red:** Discharge to sewer prohibited.

18.5 Graffiti removal

Often graffiti removal uses a solvent to soften and lift the paint from the building prior to pressure washing. Many solvents can cause odour problems in the drainage system or issues with treatment at the receiving sewage treatment works or may be harmful to the aquatic environment. This type of discharge shall only be to foul sewer.

●**Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.6 Stone and brickwork cleaning

This type of operation is usually carried out by a specialist contractor. Often aggressive chemicals are used to clean the stone or brickwork with copious amounts of water. This type of waste shall only be to foul sewer.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.7 Water softeners

Large industrial water softeners have to undergo periodic chemical regeneration to ensure they remain operational and effective. Regeneration can use aggressive chemicals such as strong mineral acids and alkalis. This type of discharge must only be to foul sewer. Discharges from water softeners that use salt may require Sewerage Undertaker approval.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.8 Asbestos removal

Asbestos removal can only be carried out by an approved contractor under the Asbestos Regulations 2006. Decontamination procedures for the operators usually requires a shower facility with discharge to the foul drainage system.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.9 Grounds maintenance

The cleaning and maintenance of grounds maintenance equipment e.g. lawn mowers, tools etc should be undertaken in a drain free area to ensure that solid material is not disposed of to sewer. The solids can be removed for disposal or returned to the grounds. If a drain free area is not available some form of solids catchpit should be used to ensure minimal solids are disposed of to foul sewer. A good maintenance regime should be maintained to ensure that that the catchpit or interceptor is regularly cleaned

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.10 Cleaning and maintenance of medical equipment

This includes the cleaning of wheel chairs, trolleys, tables and other medical equipment and should be carried out in a designated area where the resulting wastewater discharges to foul sewer.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.11 Cleaning and maintenance of ornamental ponds and water features

Care needs to be taken when cleaning ornamental ponds and water features to ensure that excess solids e.g. mud and silt are not discharged to the public drainage system. Excess solids can result in blocking of drains and cause localised flooding. Discharge must be to the foul sewer.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.12 Pressure washing of pavements, car parks and concrete areas

Pressure washing of paved and concrete areas results in removal of the surface. Care should be taken to ensure that cleaning debris do not enter the drainage system as it consists of fine particulate material that has the potential to block the receiving drain or sewer, which could involve costs for cleaning the sewer. It is good practice to clean to a drain free area and remove the debris for solid waste disposal.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.13 Decorating and small scale Construction/Renovations

Decorating

Emulsion Based Paint
Wastewater resulting from the brush or roller or spray equipment cleaning from emulsion paint may contain solids and large volumes of water. Permission should be sought from the relevant sewerage undertaker.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

Solvent Based Paint
Wastewater resulting from the cleaning of brushes or equipment that has been used for solvent based paints should **not** be disposed of to sewer due to health and safety issues and potential odour problems in the drainage system.

● **Status Red:** Discharge to sewer prohibited.

Construction/ Renovations

Includes materials such as concrete, mortar and plaster which can solidify in the drainage system causing serious blockages. This type of solid material should be disposed of away from a drained area for later removal as a solid waste or into a skip or other receptacle for later disposal.

Wastewater from construction may be permissible; however permission should be sought from the relevant sewerage undertaker.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

18.14 Fuel delivery and management

Delivery of heating oils and fuels are a high risk to the drainage network. Leaks from poorly connected fuel delivery pipes or poor management of fuel in the storage tank allowing overfilling of the tank resulting in fuel being discharged to the drainage system. Removal and cleaning of the drains can prove very expensive. To protect against such occurrences the fuel delivery point should be in a bunded area.

● **Status Red:** Discharge to sewer prohibited.

18.15 Pressure testing of pipes

The pressure testing of pipes can result in large volumes of contaminated wastewater. Any discharge should be to foul sewer and approval of the local Sewerage Undertaker shall be obtained prior to disposal as large volumes of water could cause localised flooding or contaminates could cause a pollution incident.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

Summary for Estates & Maintenance

- Discharges from estates and maintenance operations can be extremely varied in volume and contaminants.
- Discharges may only be made to foul sewer.
- Contact Sewerage Undertaker to discuss if consent is required

18.16 References / Further Guidance.

- Environment Agency (2010) *Pollution Prevention Guideline, Above Ground Oil Storage Tanks: PPG2.* Environment Agency
- Environment Agency (2002) *Pollution Prevention Guideline, Dealing with Spillages on Highways: PPG22.* Environment Agency

Section 19 WASTE MANAGEMENT

19.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Healthcare organisations store and dispose of waste materials and liquids on a daily basis. The storage or movement of waste items has the potential to result in the discharge of items and substances to waste water. The following chapter explains requirements relating to waste management on healthcare sites.

19.2 Storage

Where waste is stored on a healthcare premise pending onwards movement to treatment facilities, provisions must be made by the healthcare organisation to ensure the content of waste carts/bags/rigid bins/sharps bins cannot escape packaging and enter waste water systems including foul sewers and storm drains. Clinical waste, chemicals, oils and lubricants should be stored in bunded areas on impermeable flooring and away from watercourses and storm drains.

Spills from waste carts/bags/rigid bins/sharps bins should be swept or mopped up and disposed of via the intended waste disposal route. Liquid spills should be covered with absorbent material, swept up and disposed of via the intended waste disposal route, to ensure that no waste can enter either the foul or surface water drainage systems.

● **Status Green:** No prohibition on discharge. *

19.3 Bin Washing

Some Healthcare organisation and most clinical waste management sites clean clinical waste carts on site for redistribution. Sites either have a bin washer machine or wash them with pressure washers and cleaning agents.

Clinical waste cart bin washing

Items which are commonly found in these carts, once they are emptied, can include bodily fluids and debris (plasters, dressings, gloves etc). Good practice is to remove this before the bin is cleaned.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

19.4 Sharps bin reuse

Some clinical waste management firms operate a system on site to wash sharps bins for reuse by healthcare clients. No sharps or pharmaceutical waste content should be disposed of to public foul or surface water sewerage systems.

Healthcare organisations should ensure under their DOC (Duty of Care) obligations that any third parties undertaking sharps bin washing are appropriately permitted.

- **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

19.5 Compactors.

Compactor waste runoff may be considered trade effluent and would be controlled by the Sewerage Undertaker by 'Consent to Discharge'. The runoff waste water must be directed to foul sewer, discharges to surface water or storm drains are not acceptable as the waste has the potential to cause environmental pollution and with risk of prosecution.

Compactor run-off polluting surface water

- **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

19.6 New Treatment Technologies for clinical waste.

Alternative treatment technologies are growing in number within the United Kingdom. This includes smaller systems designed to sterilise clinical waste that can fit into hospital waste compounds or departments.

If these units discharge to foul sewer, hospitals must not install these units prior to speaking to and agreeing the systems installation with the Sewerage Undertakers.

- **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

19.7 Incinerator plants.

Some hospitals will have incinerator facilities on site. These may be run directly by the hospital itself or contracted out to a third-party waste management company. Incinerators will handle various types of clinical waste including that produced on-site and, in some cases, material imported from other healthcare facilities. Some will have dry-scrubbers (carbon) in order to remove airborne contaminants whilst others may have wet scrubber systems in place. In respect of the former it is unlikely that there will be a discharge to sewer, whereas with the latter an effluent may be produced.

The operator of a hospital incinerator will normally require a permit to operate which is issued by the relevant environmental regulator for discharges to air. Where there is also a discharge to foul sewer the operator may require the consent of the local Sewerage Undertaker prior to making a discharge.

Some hospitals have on-site incinerator facilities. Some incinerator facilities may generate energy to heat boilers to provide hot water for use in other parts of the hospital. The use of the boilers will result in a discharge to foul sewer from the blow-down process which may require the consent of the Sewerage Undertaker.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

19.8 Discharge of surgical fluids via fluid waste management systems

Technologies designed to discharge surgical fluids, as an alternative to single use suction canisters, discharge materials that comprise of blood, stomach contents, urine, faeces, sputum, vomit and disinfecting agents, all of which are normal constituents of ordinary domestic sewage, however in certain circumstances they may present problems.

Hospitals must not install these units without prior consultation with the sewerage undertakers.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

19.9 Laboratory autoclaves.

Autoclaves are used in hospitals in order to sterilise medical instruments and other objects either prior to re-use or to enable safe disposal via the solid waste stream. This is normally achieved by applying a combination of high temperature (steam) and pressure.

In respect of material that is to be disposed of, it is normally sealed in a bag and does not come into direct contact with the steam and the discharge to sewer therefore should only comprise clean water.

No discharge to sewer should be made from an autoclave facility without first consulting the Sewerage Undertaker.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

19.10 Summary for Waste Management

- Waste storage installations require integral spill containment
- Solids should be removed from containers prior to washing
- No sharps or pharmaceutical waste can be discharged to sewer
- Compactor run-off must be directed to foul sewer and may require a Consent
- Wastes arising from sharps/bin washings, new treatments, surgical fluids and autoclaves should not be disposed off to sewer without prior permission of the Sewerage Undertaker
- Incinerator, CHP and boiler discharges may require a Consent

19.11 References / Further guidance

- Department of Health (2006) *Health Technical Memorandum 07-01: Safe Management of Healthcare Waste.* TSO
- HSE guidance Note PM60

Section 20 CONSTRUCTION, DEMOLITION & REFURBISHMENT

20.1 General

*** For further information and clarification on the acceptability for discharge to foul sewer please refer to section 1.6**

Hospital Estates are the subject of continuous development with new building and building refurbishment an almost constant process. Such activity, unless properly managed, can lead to pollution from:

- Leaks or spillages of substances used on site, such as fuels, oils, chemicals, silt, cement, and so on.
- Rupture of pipelines that run through or nearby the site, such as water supply, drainage, gas or oil.
- Thoughtless disposal of waste materials.
- Discharge of heavily silted surface water run off to foul or surface water sewer.
- Washdown of vehicles, plant and equipment without using a properly constructed washbay.
- Contamination of water supply, sewers, groundwater or watercourses that run through or nearby the site.

Prevention requires that you follow good working procedures before, during and after the actual work period

20.2 Precautions

Fuel and chemical storage facilities must be sited so as to pose no risk to water supply or drainage services, nor to natural drainage, groundwater or watercourses.

Cap or seal drains if practical, to protect them from the illegal discharges of silt, cement, concrete, oil, petroleum spirit, debris or waste material. Such discharges may result in prosecution regardless of whether the discharge was deliberate, accidental, or caused by vandals or theft. Sealing is essential for demolition work.

The permission of your Sewerage Undertaker should be sought if you intend to discharge excess surface water. This is often contaminated with mud, sand or other debris and must be adequately treated before discharge (for example with settlement lagoons, Silt buster etc) to prevent pollution of sewers, treatment works and watercourses. Washout from cement mixing, concrete mixing plants or from cleaning ready-mix concrete lorries must not be allowed to flow into any drain or watercourse. Slurries may be put in a skip for off-site disposal. Site roads must be regularly scraped and kept free from deposits to prevent silt, oil or other materials entering any drain or watercourse.

Wash-down of vehicles, plant and equipment with power hoses or steam cleaners must not occur unless the site has a proper wash bay drained to foul sewer. Otherwise, washing must be carried out off-site at a suitable facility.

● **Status Amber:** Contact Sewerage Undertaker to discuss if consent is required.

20.3 Summary for Construction, Demolition & Refurbishment.

- Planning to avoid potential pollution issues is the key when undertaking construction activities
- Seek permission from your sewerage undertaker for the discharge of any excess surface water or vehicle washing effluent

Appendix 1 GLOSSARY

Terms used in the text and common terminology used by Sewerage Undertakers in the regulation of Trade Effluent

Agreement - Alternative type of trade effluent control. Used when the sewerage undertaker needs special considerations to be included, usually relating to financial provision, covering any capital expenditure incurred in providing works extensions to treat trade effluent and in other cases to effect more stringent control (including the use of a clause requiring the discharge to cease).

Chemical Oxygen Demand (COD) – The amount of oxygen consumed from a specified chemical oxidising agent in the oxidation of matter present in a sample. It approximates to the oxygen theoretically required for complete oxidation of the carbonaceous matter to carbon dioxide and water. (mg/l)

Consent to Discharge – Contains appropriate conditions relevant to the acceptance of the effluent for treatment and disposal issued under the Water Industry Act 1991, for England and Wales, The Sewerage (Scotland) Act 1968 for Scotland and The Water and Sewerage Services (Northern Ireland) Order 2006, for Northern Ireland

Dangerous Substances – The Dangerous Substances Directive (76/464/EEC) and its 'daughter' directives control discharges that are liable to contain dangerous substances and that go to inland, coastal and territorial surface waters. Dangerous substances are toxic substances that pose the greatest threat to the environment and human health. The directive specifies two lists of Dangerous Substances. List I covers those which are particularly toxic, persistent, and which may tend to accumulate in the environment. List II covers substances whose effects are still toxic, but less serious.

Fat Trap – A receptacle designed to collect and retain fats oils and grease from kitchen wastes or industrial wastewaters. This is installed in the drainage system between point of production and the sewer.

Heavy Metals – Metals such as copper, zinc, cadmium, nickel and lead that are used in industry. These can, if in sufficiently high concentrations, affect the biological sewage treatment processes and be harmful to living organisms.

Milligram's per litre (mg/l) - Used for expressing concentration of impurities in wastewater or effluent. This term has replaced parts per million (ppm)

Microgrammes per litres (µg/l) - Used for expressing concentration of impurities in wastewater or effluent. This term has replaced parts per billion (ppb)

Notice of Direction – This enables conditions in a Trade Effluent Consent to be varied

Oil Interceptor – Used to intercept, separate and prevent the passage of oil, which may be present in surface water or wastewaters.

pH – A measure of the acidity or alkalinity of an aqueous solution (0 – 14). pH 7 indicates neutrality. Acidic solutions have values below pH 7, alkaline solutions have values above pH 7.

Suspended Solids – Solids of organic and inorganic origin present in liquid effluents. Retained after filtration and drying at 105-C. (mg/l).

Appendix 2 LEGISLATION AND BENCHMARK STANDARDS

Water Regulations / Guidance

Water Industry Act 1991
Sewerage (Scotland) 1968
The Water Environment (Controlled Activities) (Scotland) Regulations 2005
The Dangerous Substances Directive (76/464/EEC)
The Trade Effluents (Prescribed Processes and Substances) Regulations 1989
The Environmental Protection Act 1990
The Water Industry Act 1991
The Water Resources Act 1991
The Radioactive Substances Act 1993
The Urban Waste Water Treatment Regulations 1994
The Environment Act 1995
The Integrated Pollution Prevention and Control Directive (96/61/EC)
The Pollution Prevention and Control (England and Wales) Regulations 2000
The Environmental Permitting Regulations 2007

Waste Regulations / Guidance

The Hazardous Waste (England and Wales) Regulations 2005.
SI 2005 No 894

Special Waste Amendment (Scotland) Regulations 2004.
SSI 2004 No 112

The Hazardous Waste (Northern Ireland) Regulations 2005.
SR 2005 No 300

The Waste Framework Directive (2008/98/EC)

Radioactive Substances Act 1993 (c.12)

HTM 07-01: Safe management of healthcare waste

HSG(95)18-Hospital Laundry Arrangements For Used And Infected Linen

HTM 07-06: Disposal of pharmaceutical waste in community pharmacies
(*to be amalgamated into HTM 07-01when revised edition is published*)

PPG2 Fuel Delivery and Management.

PPG22 Incident response - Dealing with Spills

Appendix 3 LIST OF CHEMICALS

The following list shows chemicals that are in used in the laboratory environment. If they are in normal usage, e.g. as a component of a stain then rinsed off a slide, then current procedures are acceptable. Where larger quantities need to be disposed of then they should be sent for disposal with other chemicals. They should not be poured down the drain unless they are unrestricted. Where there is an entry in the query column, please contact your local water company with details of quantities likely to be disposed of to sewer and they will be able to advise you.

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
1,4 Dioxane		✓	
1,4-Benzoquinone			✓
1-Butanol	✓		
1-Nitroso-2-naphol		✓	
1-octane sulphonic acid	✓		
1-Octanol	✓		
2 mercaptoethanol			✓
2,4-Dichlorophenol (sulphonated)			✓
2,4-dinitrophenylhydrazine			✓
2,6-DCIP	✓		
2,6-dichloroindophenol(Na)	✓		
2-Butanone			✓
2M Sulphuric acid	✓		
3,3'-Diaminobenzidine tetra HCl	✓		
3,4-Dihydroxybenzylamine	✓		
3-Hydroxytyramine hydrochloride (Dopamine)	✓		
3M sodium acetate	✓		
4-Aminobenzoic acid	✓		
4-Aminophenazone			✓
4-Dimethylaminobenzaldehyde		✓	
4-hydroxy-3-methoxy-phenylacetic acid	✓		
5,5'-dithiobis(2-nitrobenzoic acid)	✓		
5'5' dithio-bis (2-nitrobenzoic acid)	✓		
5-Hydroxyindole-2-carboxylic acid	✓		
5-iodo-2 deoxyuridine (2nd floor fridge)		✓	
Acetic acid	✓		
Acetic anhydride	✓		
Acetoacetate lithium salt		✓	
Acetoacetatic acid		✓	
Acetone	✓		
Acetonitrile			✓
Acetonitrile LCMS grade			✓
Acetyl chloride			✓

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
cetyl Coenzyme A sodium salt	✓		
Acid alcohol (1%, 0.45%)	✓		
Acid fuchsin	✓		
Acridine orange	✓		
Acridine orange (powder)	✓		
Acrylamide / bis-Acrylamide powders @ 29:1 mix	✓		
Activated Charcoal			✓
Adenosine 5' triphosphate	✓		
Adenosine 5' triphosphate disodium	✓		
Agarose	✓		
Alanine	✓		
Albert stain (liquid)	✓		
Albumin, bovine serum	✓		
Alcian Blue	✓		
Alcian green	✓		
Alpha Cellulose	✓		
Alumina			✓
Aluminium oxide			✓
Ambetlite MB150 resin			✓
Amino black 10B	✓		
Aminoantipyrine		✓	
Ammonium acetate		✓	
Ammonium dihydrogen orthophosphate		✓	
Ammonium ferric citrate green	✓		
Ammonium Ferric Sulphate	✓		
Ammonium formate	✓		
Ammonium Hydrogen Carbonate			✓
ammonium iron ll sulphate	✓		
Ammonium oxalate		✓	
Ammonium persulfate	✓		
Ammonium sulphate	✓		
Ammonium suphamate	✓		
Ammonium thiocyanate		✓	
Ampicillin	✓		
Aniline blue	✓		
Aniline hydrochloride		✓	
Aniline oil			✓
Antibumping granules			✓
Anti-human globulin		✓	
Antimony potassium tartrate		✓	
Antimycin A		✓	
Argininosuccinic acid	✓		
Artisan Wastes		✓	
Ascorbic acid	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Auramine phenol	✓		
Bacto Protease Peptone 3	✓		
BactoPepto agar	✓		
Barbitone			✓
Barium chloride		✓	
Barium hydroxide		✓	
Basic fuchsin	✓		
Bathocuproine disulphonic cacid	✓		
Benzoic acid	✓		
Benzyl alcohol	✓		
Bile salts	✓		
Bilirubin	✓		
Biotin-4-amido benzoic acid sodium salt		✓	
Blood agar Base	✓		
Blue dextran	✓		
Boric Acid	✓		
Bovine serum	✓		
Bovine serum albumin	✓		
Brilliant green	✓		
Bromothymol Blue	✓		
Bromphenol blue indicator dye	✓		
Bronidox	✓		
BSA standard	✓		
Buffer solution (borate) pH 8.0	✓		
Buffer solution (citrate) pH 6.0	✓		
Butan-1-ol	✓		
Calcium carbonate	✓		
Calcium chloride	✓		
Calcium hydroxide	✓		
Calcium lactate	✓		
Calcium oxalate	✓		
Calcium pantothenate	✓		
Calcium phosphate (hydroxyapetite)		✓	
Calcium silicate		✓	
Canadian balsam in xylene			✓
Carbol fuchsin	✓		
Carmine (Aceto alum Carmine)	✓		
Casein hydrolysate	✓		
Catalase	✓		
Cedar wood oil	✓		
Cellabs Mounting fluid pH 7.2)		✓	
Cellulose (Sigmacell)	✓		
chloroform			✓
Chloronaphthol	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Chloros	✓		
Choline Chloride	✓		
Chromotrope 2R	✓		
Citrate phosphate buffer	✓		
Citric acid	✓		
Cobalt (II) nitrate-6-hydrate	✓		
Coenzyme A	✓		
Coenzyme Q1	✓		
Coenzyme Q10	✓		
Concanavalin A	✓		
Coomasie Blue	✓		
Copper (II) chloride	✓		
Copper Nitrate	✓		
Copper sulphate	✓		
Creatine	✓		
Creatine phosphokinase	✓		
Cresyl Blue (Brilliant)	✓		
Crystal violet concentrate	✓		
Cytochrome C	✓		
D Biotin	✓		
D(+)-Glucose	✓		
Decylubiquinone	✓		
Dextran	✓		
Di potassium hydrogen orthophosphate		✓	
Di sodium EDTA dihydrate		✓	
Di sodium hydrogen orthophosphate		✓	
Di sodium hydrogen orthophosphate dihydrate		✓	
Di sodium hydrogen orthophosphate dodecahdrate		✓	
Diaminobenzedene	✓		
Di-ammonium hydrogen orthophosphate		✓	
Di-Ammonium Iron (11) Sulphate	✓		
Dichloroethane			✓
Diethyl Ether			✓
Diethyl pyrocarbonate	✓		
Dimethyl sulphoxide	✓		
Dimethyldichlorosilane	✓		
Dimethylformamide		✓	
Diphenyltetrazolium bromide/ 3 4 5 dimethylthiazole 2 yl	✓		
Dipotassium EDTA		✓	
Di-Potassium Hydrogen Orthophosphate (anhydrous)		✓	
di-Potassium hydrogen orthophosphate trihydrate		✓	
di-Sodium disulphite		✓	
Disodium EDTA		✓	

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Disodium EDTA dihydrate		✓	
Disodium hydrogen orthophosphate		✓	
Disodium tetraborate	✓		
Dithiothreitol	✓		
Dithiotreitol (Clelands reagent)	✓		
DL Homocysteine	✓		
DL-Diothiothreitol	✓		
DL-Lactic acid lithium salt	✓		
DL-β-Hydroxybutyric acid sodium salt	✓		
D-Mannitol	✓		
DNA ladder	✓		
DNA Loading buffer (Orange G)	✓		
Dodecylbenzenesulphonic acid	✓		
Dowex	✓		
DPX	✓		
Dried skimmed milk	✓		
EDTA		✓	
EDTA (Disodium salt)		✓	
EDTA di potassium salt		✓	
EDTA-Tetraacetic Acid		✓	
Elgalite disinfectant	✓		
Eosin	✓		
Erythromycin	✓		
Ethanol	✓		
Ether/ diethyl ether			✓
Ethidium bromide			✓
Ethyl acetate	✓		
Ethylaminocarbazole	✓		
Ethylene glycol-bis(β-aminoethylether)-N,N,N',N'-tetraacetic acid	✓		
Ethylenebis (oxyethylenenitrilo) tetracetic acid		✓	
Eukitt (contains xylene)			✓
Euparol Vert	✓		
Evan's Blue	✓		
FAD	✓		
Faecal liquid waste containing 10 % ether and 10 % formalin		✓	
Fast Green FCF	✓		
Fast Violet Salt	✓		
Ferric ammonium citrate (Brown)	✓		
Ferrous Sulphate	✓		
Ficoll	✓		
Field's Stain	✓		
Flavin mononeucleotide	✓		
Fluorescein	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Fluorescent brightener 28	✓		
Foetal calf serum	✓		
Folic acid ((Vitmix18)	✓		
Folins reagent	✓		
Formaldehyde	✓		
Formamide	✓		
Formic Acid	✓		
Formvar	✓		
Freon	✓		
Gelatin	✓		
Gentamicin	✓		
Giemsa	✓		
Giemsa stain	✓		
Glacial acetic acid	✓		
Glucose	✓		
Glutamic acid	✓		
Glutathionone - reduced	✓		
Glycerol	✓		
Glycine	✓		
Glyoxylic acid	✓		
Goat anti-aldolase	✓		
Goat anti-human IgG	✓		
Goat anti-pyruvate kinase	✓		
Goat anti-s100B	✓		
Guanidine hydrochloride	✓		
Haematoxylin	✓		
Haematoxylin Delafield’s	✓		
Haematoxylin Ehlick's	✓		
Haz Tabs	✓		
HEEO agarose	✓		
HEPES	✓		
Hexane			✓
Hexanoic acid	✓		
Hippuric acid	✓		
Homocarnosine	✓		
Horse radish peroxidase	✓		
Hydrazine hydrate	✓		
Hydrochloric Acid	✓		
Hydrogen peroxide	✓		
Hydrogen peroxide 3%	✓		
Hydroxypyruvic acid	✓		
Hypochlorous acid	✓		
Hypophosphorous acid	✓		
Hypoxanthine	✓		
IEF agarose	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Imidazole	✓		
Immersion oil RAL		✓	
IMS	✓		
Indian Ink	✓		
Indinavir (Crixivan capsules)		✓	
Inosine	✓		
Inositol	✓		
Iodine	✓		
Iron (III) chloride hexahydrate	✓		
Iron (lll)chloride 6 hydrate	✓		
Iron nitrate 9-hydrate	✓		
Isoamyl alcohol	✓		
Isopropanol	✓		
Isovanillic acid	✓		
Kanamycin	✓		
Kaolin	✓		
L Cysteine	✓		
L cysteine hydrochloride	✓		
L Methionine	✓		
Lactic acid	✓		
Lactophenol	✓		
Lactophenol aniline blue	✓		
L-Amino Acids	✓		
L-Ascorbate	✓		
L-Ascorbic acid	✓		
Laurel sulphate (Sodium dodecyl sulphate SDS)	✓		
LBC Vials	✓		
L-Cystine	✓		
L-Cystine	✓		
LDH (rabbit muscle)	✓		
Leishmans's stain	✓		
Leupeptin	✓		
L-glutamic dehydrogenase	✓		
Light Green SF yellowish	✓		
Liquid nitrogen		✓	
Liquid paraffin	✓		
Liver powder defatted	✓		
L-proline agar		✓	
Lugol's iodine with Glacial acetic acid	✓		
Lysozyme	✓		
Magnesium carbonate (light)	✓		
Magnesium chloride	✓		
Magnesium chloride hexahydrate	✓		
Magnesium phosphate	✓		
Magnesium Sulphate	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Malachite Green	✓		
Malachite green	✓		
Maleic acid		✓	
Malonyl CoA lithium salt	✓		
Manganese (II)oxide	✓		
May-Grunwald	✓		
MEO agarose	✓		
MERCK Blood base agar 2		✓	
Mercuric chloride			✓
Mercuric thiocyanate			✓
MES buffer concentrate	✓		
meta-Phosphoric acid	✓		
Methanol	✓		
Methyl tungstate	✓		
Methyl Violet 6B	✓		
Methylene Blue	✓		
Methylene Chloride (Dichloromethane)	✓		
Milk powder	✓		
Mineral oil	✓		
Molecular sieve type 3A	✓		
MOPS buffer concentrate	✓		
Mouse anti-gamma enolase	✓		
N-(3-[2-furoyl]aryloyl)-PHE-GLY-GLY	✓		
N,N,N',N' Tetramethyl-p-phenylenediamine	✓		
N,N-dimethyl formamide		✓	
N-1-naphtyl-ethylene diamine hydrochloride	✓		
NADH		✓	
NADPH		✓	
Napthalene Black Stain	✓		
Napthol AS Mix Phosphate	✓		
Nessler's reagent	✓		
Neutral red 1% acqueous	✓		
N-Glycyglycine	✓		
N-Hippuryl-HIS-LEU	✓		
Niacinamide	✓		
Nicotinamide (part of vitamin mix 18)	✓		
Nicotinic acid	✓		
Nigrosin	✓		
Ninhydrin	✓		
Nitric Acid	✓		
Nitric acid	✓		
N-p-Tosyl-L-phe-chloromethyl ketone	✓		
OPD			✓
O-phenylene diamine			✓
o-Phenylenediamine dihydrochloride			✓
Orange G sodium salt	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Orotic acid	✓		
Orthoboric acid	✓		
Orthophosphoric acid	✓		
Oxalic acid	✓		
Oxaloacetatic acid		✓	
OXOID Blood agar base		✓	
Palmitoyl coenzyme A Lithium salt	✓		
Pantothenic Acid	✓		
para aminobenzoic acid (PABA)	✓		
Paraffin wax			✓
PBSA tablets			✓
Penicillin	✓		
Pepsin	✓		
Perchloric acid	✓		
Periodic Acid	✓		
Peroxidase	✓		
Phenazine methosulphate	✓		
Phenol	✓		
Phenolphthalein	✓		
Phenylhydrazine HCL			✓
Phenylmethylsulfonyl fluoride	✓		
Phosphate buffer pH 6.8/7.2	✓		
Phosphate buffered saline (concentrate and working solution)	✓		
Phosphorous pentoxide	✓		
Phosphotungstic acid	✓		
Polyethylene glycol	✓		
Polyoxyethylene Sorbitan Monolaurate	✓		
Polyvinylpolypyrrolidone	✓		
Polyvinyl-pyrolidone	✓		
Polyviol	✓		
Potassium aluminium sulphate	✓		
Potassium bicarbonate	✓		
Potassium carbonate	✓		
Potassium carbonate anh.	✓		
Potassium Chloride	✓		
Potassium Cyanide		✓	
Potassium dichromate		✓	
Potassium dihidrogen orthophosphate		✓	
Potassium Ferricyanide		✓	
Potassium hydrogen carbonate	✓		
Potassium hydroxide	✓		
Potassium iodide	✓		
Potassium permanganate	✓		
Potassium phosphate		✓	

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Potassium phthalate	✓		
Potassium sodium tartrate	✓		
Potassium sulphate	✓		
Potassiun chloride	✓		
Propan-1-ol	✓		
Propan-2-ol	✓		
Propylene oxide		✓	
Proteinase K	✓		
Pyridoxal 5-phosphate	✓		
Pyridoxal hydrochloride	✓		
Pyridoxine	✓		
Pyroneg (Instrument washing Detergent)		✓	
Rabbit anti-cow s100B	✓		
Rabbit anti-ferritin	✓		
Rabbit anti-goat HRP	✓		
Rabbit anti-human IgG HRP	✓		
Rabbit anti-lambda light chain	✓		
Rabbit anti-mouse HRP	✓		
Rhodamine 6G	✓		
Riboflavin	✓		
Rice Starch	✓		
Ringer's solution	✓		
Rotenone		✓	
RPMI 1640	✓		
S-(5'-adenosyl)-L-methionine chloride	✓		
Safranin	✓		
Saline	✓		
Saponin	✓		
Sarcosine oxidase	✓		
Schiff's Reagent	✓		
Scneider's Drosphila Insect Tissue Medium	✓		
SDS 10% solution			✓
Sephadex			✓
Serum albumin	✓		
Silica (silicon dioxide)			✓
Silica gel			✓
Silicone fluid	✓		
Silver nitrate		✓	
SOC medium	✓		
Sodium acetate	✓		
Sodium acetate trihydrate	✓		
sodium azide	✓		
Sodium barbitol	✓		
Sodium barbitone	✓		
Sodium bicarbonate	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Sodium borohydride	✓		
Sodium cacodylate		✓	
Sodium carbonate	✓		
Sodium chlorate	✓		
Sodium Chloride	✓		
Sodium citrate	✓		
Sodium cyanide		✓	
Sodium deoxycholate	✓		
sodium dichloroisocynurate	✓		
Sodium dihydrogen citrate	✓		
Sodium dihydrogen orthophosphate		✓	
Sodium Dithionite (Sodium Hydrosulphite)		✓	
Sodium formate	✓		
Sodium glycollate	✓		
sodium hydroxide	✓		
Sodium hydroxide 0.1N	✓		
Sodium hypochlorite	✓		
Sodium hypophosphite	✓		
Sodium metabisulphite		✓	
Sodium molybdate	✓		
Sodium nitrite	✓		
Sodium nitroprusside		✓	
Sodium Oxalate	✓		
Sodium phosphate		✓	
Sodium pyruvate	✓		
Sodium salicylate	✓		
Sodium Sulphate	✓		
Sodium sulphite	✓		
Sodium tetraborate	✓		
Sodium thiosulphate	✓		
Sodium tungstate	✓		
Sorbitol	✓		
Sputafluol		✓	
SSC buffer	✓		
S-Sulphosalicylic acid	✓		
Streptomycin	✓		
Succinic acid	✓		
Sucrose	✓		
Sudan Black	✓		
Sudan lll	✓		
Sulphadimethoxine		✓	
Sulphanillic acid	✓		
Sulphuric acid	✓		
TAE buffer	✓		
Tannic acid	✓		
TBS 10X	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Teepol	✓		
tert-Butanol	✓		
Tetramethylbenzidine	✓		
Thenoyltrifluoroacetone		✓	
Thermometer (mercury?)			✓
Thiamine hydrochloride		✓	
Thioctic acid		✓	
Thiomerosal		✓	
Thionin		✓	
Thymidine		✓	
Thymol	✓		
Tocopheral acetate (D alpha)		✓	
Toludine Blue	✓		
Toluene			✓
tri Potassium phosphate	✓		
Tri sodium citrate	✓		
Trichloroethylene	✓		
1,1,1 - trichloroethane	✓		
Trichloracetic acid	✓		
Trichrome stain blue	✓		
Triethanolamine	✓		
Trifluoroacetic acid	✓		
tri-Potassium citrate	✓		
Tris		✓	
TRIS		✓	
Tris Borate EDTA buffer		✓	
Tris buffer		✓	
Tris edta		✓	
Tris(hydroxymethyl)-methylamine	✓		
Tris-HCl buffer	✓		
Tri-Sodium Citrate	✓		
tri-Sodium orthophosphate	✓		
TritonX100	✓		
Trizma Base	✓		
Trizma HCL	✓		
Trizma hydrochloride	✓		
Trypan blue	✓		
Trypsin	✓		
Tryptan blue solution	✓		
Trypticase soy agar	✓		
Tryptophan DL	✓		
Tryptose agar	✓		
Tryptose broth	✓		
Tween 20	✓		

CHEMICAL	PERMITTED UNDER NORMAL OPERATING PROCEDURE	TO BE QUERIED BEFORE DISCHARGE	FORBIDDEN
Tween 80 Polyoxyethylene sorbitan mono-oleate	✓		
Ultraclear	✓		
Urea	✓		
Uric acid	✓		
Vancomycin	✓		
Vectabond reagent	✓		
Virkon	✓		
Vitamin A	✓		
Vitamin B12	✓		
Vitamin D2 Calciferol	✓		
Vitamin E	✓		
Vitamin H	✓		
Vitamin K	✓		
Vitamin T mix (Vit B mix) (Vitmix18. See Vit T mix as well for Vit B)	✓		
Western blot transfer buffer	✓		
Wright's stain	✓		
Xanthine	✓		
Xanthine Oxidase	✓		
Xylene			✓
Xylene cyanol			✓
Yeast extract	✓		
Zinc (powder)			✓
Zinc acetate	✓		
Zinc chloride	✓		
Zinc sulphate	✓		
Zinc sulphate heptahydrate	✓		
β NADPH		✓	
δ aminolevulinic acid		✓	