

Risk Assessment Form

Procedure	Use of Water Purification System
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Name(s) of person performing the work	Users (Lab manager & Lab Technician & Tenants & Licensee's)		
Name & position of assessor	Khwaja Islam & Laboratory Manager	Signature	
Date of assessment	06/09/2018	RA Number	BioE 0022

Outline of procedure / activity:

The water purification system is purchased from Triple red and its Duo Type 2 Water / Deionised (DI) water and Ultrapure type 1 water purification System and Geno Water System with Tanks.

How does Deionisation work?

Deionisation is a process that removes ions from reverse osmosis water with the use of synthetic resins. The ions are removed from the water through a series of chemical reactions. These reactions occur as the water passes through the ion exchange resins beads. Gradually, all unwanted ions are replaced by hydrogen and hydroxyl ions which combine to form pure water. Deionisation is the only process that can produce the quality required for Type 2 water.

Most Ultrapure Water systems have UV photooxidation as an additional technology.

How does Ultraviolet (UV) light purification work?

Typical UV disinfection systems involve the flow of water through a vessel containing a UV lamp. As the water passes through, microorganisms are exposed to intense ultraviolet light energy which causes damage to genetic molecules (i.e. nucleic acids: DNA or RNA) needed for reproductive functions. This damage prevents the microorganism from multiplying or replicating in a human or animal host. Because the microorganism cannot multiply, no infection can occur. Disinfection of water is achieved when UV light causes microbial inactivation.

In the services lab (696.10.24) there is:

1. **Geno50** - Type 2 water system at **50L/hr**. Tank 150 pump - 150 Litre Storage Reservoir with tank air filter and boost pump to provide feed water to lab washers (final rinse of lab washers is 30 Litre).
2. **DUO30-UF-R - Duo** Type 2 and Type 1 Water system with remote dispenser for Type 1 Water. Remote- Remote Dispense for Type 2 water (touch screen). Tank- 30L Reservoir with tank air filter and Tap on front to take off Type 2 quality water.
Note: Type 1 and type 2 water can be dispensed at the same time.

In the chemistry lab (696.10.23) there is:

1. **DUO30-UF-R - Duo** Type 2 and Type 1 Water system with remote dispenser for Type 1 Water.
Remote- Remote Dispense for Type 2 water (touch screen).
Tank- 30L Reservoir with tank air filter and Tap on front to take off Type 2 quality water (**10L/h**).
Note: Type 1 and type 2 water can be dispensed at the same time.

Type 2 DI Water Quality general laboratory grade water **1-15 MΩ-cm**.

Type 1 Water is Ultrapure water **18.2 MΩ-cm** water quality.

Type 2 water DI water is suitable for:

- General laboratory applications requiring higher ionic purity
- Buffer make up
- Media production
- Sample dilution and reagent preparation
- General chemistry
- Spectrophotometry
- Protein electrophoresis
- Cytology & Histology
- Glassware washing & rinsing

Type 1 water (ultrapure water) is suitable for:

- General analysis
- Standard buffer
- Atomic absorption spectroscopy (AAS)
- Gas chromatography (GC)
- Ion chromatography (IC)
- Inductively Coupled Plasma Mass Spectroscopy (ICP-MS)
- Flow cytometry
- Cell and tissue culture
- Pyrogen sensitive applications
- Micro and molecular biology
- Polymerase chain reaction (PCR)
- High-performance liquid chromatography (HPLC)
- TOC analysis

Potential hazards

Substance or item handled	Associated Hazard (s)	Existing Control Measures	Risk (L/M/H)	Further Action required	Risk (L/M/H)
Use of Geno Type 2 Water System and Duo Water System with Tanks.	Electrical hazard - Electrical shock – danger of death.	Only trained personal are allowed to use the machine. Water purification systems is earthed, protective earth connection for the machine is provided using 13A plug fitted to the machine (RCD protected). Regular visual checks of power cords for fault, fraying or wear and regular electrical safety check. Any faults reported and repaired before use.	L	No further action required if the existing control measures are adhere to.	L
Use of Geno Type 2 Water System and Duo Water System with Tanks.	UV Lamp	The UV lamp is housed in enclosed box for the ultra-pure water type 1. Never look direct into the light. Triple red engineer will change the UV lamp once a year.	L	No further action required if the existing control measures are adhere to.	L

Persons potentially at risk:

Only the user or others near by

Action in event of an accident or emergency:**1. First Aid Measure:**

Burns – immersing the burn in cool water immediately, removing clothing from the burn area, and keeping the injured area cool for at least five minutes (preferably longer). Any burns to the face or eye or any burns that blister should be seen by a physician.

2. Fire: raise the fire alarm and evacuate the area. Use correct fire extinguisher if you have been trained and it is safe to do so.**Arrangements for monitoring effectiveness of control:**

Daily inspection of equipment by lab technician.

Annual preventative maintenance carried by external contractor (Triplered).

Instruction and training given to all operators which is reviewed annually.

Existing operators receive annual refresher training.

Annual pat testing by external contractor.

Arrangements for monitoring effectiveness of control:**Review of the Risk Assessment:**

Date of review		Name of reviewer	
Date of next review		Signature	

Have the control measures been effective in controlling the risk?

Yes	No
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Have there been any changes in the procedure or in the information available which affect the estimated level of risk from the listed substances

Yes	No
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What changes to the control measures are required?

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Declaration by Tenants/Licensee/Technician:

I confirm that I have read this Risk Assessment and that I understand the hazards and risks involved and will follow all of the safety procedures stated. Where PPE has been identified as a control measure, I will ensure that it is worn.

Declaration by Laboratory Manager (LM):

I confirm that the tenant/licensee/technician who has signed below is competent to undertake the work. My counter-signature indicates that I am happy for the work to proceed.

Name (Please print)	Signature	LM Countersignature	Date



Name (Please print)	Signature	LM Countersignature	Date