Risk Assessment Form

Procedure	Use of UV/Visible spectrophotometer (Biowave DNA)

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	01/10/2018	**RA Number**	BioE 0021

Outline of procedure / activity:

The UV/Visible spectrophotometer (Biochrom WPA Biowave DNA) is located in Innovation lab 1 (696.10.4) is a spectrophotometer which is a simple-to-use UV/Visible instrument with a CCD array detector (1024 pixels). It has no moving parts, which is the basis of the rapid scanning operating system. This instrument is ideal for measurements in the visible and ultraviolet wavelength region of the electromagnetic spectrum (wavelength range of 190nm to 900nm).

The stored methods include DNA, RNA and oligonucleotide calculations, protein assays such as direct UV measurement, BCA, Biuret, Bradford and Lowry and cell density measurement. Biowave DNA can also measure Absorbance or concentration at any wavelength so there is complete flexibility for future applications. For added convenience it is possible to display a scan of the nucleic acid profile which is particularly useful for RNA samples where impurities may be present in the 230 nm region, yet not have an adverse effect on the 260/280 Absorbance ratio. The system is compatible with both Quartz and disposable low volume UV cuvettes.

The instrument can be used as a standalone or results may be exported. Results can be printed directly using an (optional) integrated high quality graphical printer for a permanent record. Export options include via a USB connection to a suitable PC running Print Via Computer (PVC) software (optional) for advanced reporting and data storage. Alternatively the SD card accessory (optional) allows laboratories to export to standard SD or SDHC memory cards.

Switch on the instrument via the keypad (On/off key) after it has been plugged in. The instrument will perform a series of self-diagnostic checks. Please read through the user manual prior to use.

After switch on and calibration, the default home page is "Biowave DNA" offering the choice of

DNA	Concentration and purity check for DNA samples
RNA	Concentration and purity check for RNA samples
Oligo	Concentration and purity check for Oligo samples
Absorbance/Concentration	Absorbance at a user defined wavelength or a colorimetric assay at a single

wavelength based on a simple factor either entered or calculated from a simple standard

OD600	Bacterial cell culture measurement
Methods	Allows 9 frequently used configured methods to be stored for easy re-use
Protein	This folder contains various protein assay methods
Utilities	Instrument set up (date, time, language, etc)

Sample handling tips:

- Note that the light beam is directed from RIGHT to LEFT through the cell chamber; therefore please ensure the cell is inserted in the correct alignment.
- The cell holder supplied with the instrument accepts standard 10 mm path length quartz, glass or plastic cells.
- The optical height is 15 mm, and the minimum volume that can be used is approx. 10µl in an ultra-micro cell.
- 12 mm test tubes maybe used (e.g. for cell cultures), however they are not recommended as higher quality data is produced by using disposable cuvettes for the analysis. If used, align the indicator line on 12 mm test tubes in the same direction to ensure reproducible positioning of the tube. Note that test tubes do not last forever, and that the surface becomes scratched and blemished through repetitive use; if this is the case they should be replaced.

Lamp Replacement:

- The xenon lamp should not need replacement until after several years of use. In the unlikely event that it does need replacing, this should be undertaken by a service engineer from the supplier.

Operator must be trained in operating inverted microscope to guarantee safe daily use. Untrained Personnel are not be allowed to operate the inverted microscope. Users should operate the inverted microscope according to instructions in the manual. User must always ensure that power cable is in good condition, no wires exposed.

Safety precautions:

- The instrument must be placed on a stable, level bench or table that can take its weight (< 4.5 kg) so that air can circulate freely around the instrument.
- Temperature range 5°C to 35°C. Note that if you use the instrument in a room subjected to extremes of temperature change during the day, it may be necessary to recalibrate (by switching off and then on again) once thermal equilibrium has been established (2-3 hours).
- Maximum relative humidity of 80% up to 31°C decreasing linearly to 50% at 40°C.
- When using calibration standard filters, insert such that the flat surface is facing away from the spring end of the cell holder.

Potential hazards

Substance or item handled	Associated Hazard (s)	Existing Control Measures	Risk (L/M/H)	Further Action required	Risk (L/M/H)
Xeon Lamp	Burn	Xeon is enclosed in the instrument. If does need replacing, this should be undertaken by a service engineer from the Biochrom WPA.	L	No further action required if the existing control measures are adhere to.	L
Use of UV/Visible spectrophotometer (Biowave DNA)	Electrical hazard - Electrical shock – danger of death.	Only switch on the device if the device and power cable are undamaged. Only trained personal are allowed to use the machine. Incubator is earthed, protective earth connection for the machine is provided using 13A plug fitted to the machine (RCD protected). Make sure it has been PAT tested. 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

Persons potentially at risk:

Only the user or others near by

Action in event of an accident or emergency:

1. **Fire**: raise the fire alarm and evacuate the area.

Arrangements for monitoring effectiveness of control:

Daily inspection of equipment by lab technician.

Annual preventative maintenance carried by external contractor (Eppendorf).

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

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

What changes to the control measures are required?

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