



## Risk Assessment – VI-RA-004- Preparation of samples for Flow cytometry

### Scope

Flow cytometry is a laser-based, biophysical technology employed in cell counting, cell sorting, biomarker detection and protein engineering, by suspending cells in a stream of fluid and passing them by an electronic detection apparatus. It allows simultaneous multiparametric analysis of the physical and chemical characteristics of up to thousands of particles per second.

<b>Carried out by:</b>	Tiphaine Bouriez-Jones	<b>Date carried out:</b>	May 2015	<b>Review Due:</b>	May 2018	
<b>Hazard (Cause and consequence)</b>	<b>Affected Groups</b>	<b>Existing controls</b>			<b>Risk</b>	<b>Further actions</b>
Release or exposure of biological pathogens (if cells are run unfixed)	Staff, students and visitors	<p>Users are required to fill a FACS Bioquestionnaire prior to commencing work in the FACS facility to assess the work planned.</p> <p>Samples coming from the CL3 suite are fixed prior to coming out of the CL3 suite. Unfixed cells are not allowed to leave the CL3 suite.</p> <p>If samples cannot be fixed, disinfectant will need to be added after each run in the waste tank: 200ml of CHEMgene.</p> <p><b>See specific FACS BioQuestionnaire kept in the Flow Facility.</b></p>			Low	None
Exposure to paraformaldehyde (PFA)	Staff, students and visitors	<p>Via inhalation: User must weight PFA in a fume hood. Powder stocks are being run down and will be replaced by solution stock only.</p> <p>Via skin adsorption: User must wear gloves and labcoat at all time.</p> <p>Via instillation (eye): User must wear safety spectacles at all time.</p> <p><b>See specific COSHH risk assessment.</b></p>			Medium	Check on LeV
Exposure to laser beam	Staff, students and visitors	<p>The CyAn and Fortessa FACS system both contain Class 3B lasers, but are Class1 laser by design.</p> <p>During normal operation of the CyAn and Fortessa system the lasers are enclosed and therefore no significant risk is associated. However during alignment, which occurs approximately once every 4-6 months, Room 664.20.32 (NDM-RB) is defined as a Laser Controlled</p>			Low	Obtain a shroud to prevent exposure to laser whilst Engineer is



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		<p>Area. It is demarcated at the entry door, by a Laser Hazard Warning sign indicating the operation of Class 3B open beam lasers and a copy of these local rules.</p> <p>No specific risks exist with the normal operation of the CyAn or Fortessa, provided the covers and lids are in place. Therefore normal operating procedures of the CyAn are sufficient.</p>		servicing the instrument.
Musculoskeletal injuries from Manual Handling Operation (20L sheeth fluid tank)	Staff, students and visitors	<p>The CyAn and Fortessa system require a 20L (~20Kg) sheeth fluid tank to operate. Smaller tanks are not available from the company which provides the sheeth fluid. This weight is above the recommended threshold for arm length lifting for women.</p> <p>Staff are trained on the safe operation of the equipment. Waste tank are emptied by the FACS facility manager on a weekly basis.</p> <p>A trolley is available within the room to reduce the manual handling operation as much as possible.</p> <p>Tanks are stored nearby the machines and off the floor to reduce manual handling operation as much as possible.</p> <p>Users are encouraged to ask for help if there are not able to lift the sheeth fluid tank (20Kg approximatively).</p> <p>Manual handling training course is available from the Safety Office, users are encouraged to attend the manual handling course.</p>	Medium	None

It is the users responsibility to ensure what controls are needed to ensure that the health of themselves and others around them. It is imperative that you **DO NOT** start any work until you are absolutely sure of the appropriate precautions that need to be employed. If you are unsure seek advice from your line/laboratory manager or your departmental safety officer (DSO).