



Risk Assessment – VI-RA-010- Magnetic depletion

Scope

Magnetic-activated cell sorting (MACS) is a method for separation of various cell populations depending on their surface antigens (CD molecules). The MACS method allows cells to be separated by incubating with magnetic nanoparticles coated with antibodies against a particular surface antigen. This causes the cells expressing this antigen to attach to the magnetic nanoparticles. Afterwards the cell solution is transferred on a column placed in a strong magnetic field. In this step, the cells attached to the nanoparticles (expressing the antigen) stay on the column, while other cells (not expressing the antigen) flow through. With this method, the cells can be separated positively or negatively with respect to the particular antigen(s).

Carried out by:	Tiphaine Bouriez-Jones	Date carried out:	May 2015	Review Due:	May 2018	
Hazard (Cause and consequence)	Affected Groups	Existing controls			Risk	Further actions
Infection from exposure to pathogens - Via direct contact with the pathogen (i.e. skin adsorption from splash) - Via spill of material - Via incorrect disposal of waste	Staff Students and visitors	<p>CL3 biological agents</p> <p>Only trained users who have shown evidence of their experience to the CL3 Safety Officer will have access to the CL3 suite out of hours.</p> <p>Each user is trained to adhere to the CL3 Code of Practice, they will follow the precautions involved with handling and storing pathogens.</p> <p>Every user must double glove, wear a leak-resistant disposable gown and wear safety spectacles whilst working in the suites. The use of sharps is forbidden in the CL3 suites.</p> <p>Out of hours workers must at least have a buddy system in place or work in pairs.</p> <p>Users are familiar with emergency procedures and a spill drill is implemented as a check on measures.</p> <p>A telephone available in each CL3 suite, with up-to-date list of emergency contact details next to it.</p>			Medium	Bi-yearly checks on the BSC within CL3 Yearly checks on BSC in CL2



Risk Assessment – VI-RA-010- Magnetic depletion

		<p>Waste is autoclaved within the suite, samples will be packaged in tertiary container if they need to be taken outside of the CL3 suite.</p> <p>No engineer is allowed to work out of hours in the CL3 suite.</p> <p>CL2 biological agents</p> <p>Users are trained to follow good microbiological practice. They must wear blue labcoat, nitrile gloves and safety spectacles at all time whilst working in CL2.</p> <p>Procedures in case of spill or exposure policies are explained at induction and the policies are displayed in the CL2 laboratories.</p>		
Being trapped in the CL3 suite out of hours (door release mechanism no longer functioning)	Staff Students and visitors	Emergency release of the door mechanism present on each door.	Low	Yearly maintenance service contract
Entering the suites under duress	Staff Students	There is a duress code which can be entered instead of the normal code which will raise the alarm directly to Security Services without the knowledge of the persons entering the suites.	Low	Tested yearly by Facilities
Loss of containment	Staff Students and visitors	<p>An audible alarm is triggered in case of loss of containment to alert users.</p> <p>All users are familiar with the emergency procedure in case of loss of containment: securing their work, leaving the facility without delay and alerting Facility as soon as possible to resolve the issue.</p>	Low	Pressure monitored weekly, yearly maintenance contract.
Injury due to misuse or faulty equipment	Staff Students	All users are trained in the correct operation of instruments. Specialised equipment such as centrifuges and incubators are under maintenance service contract.	Low	Incubators and centrifuges serviced yearly



Risk Assessment – VI-RA-010- Magnetic depletion

	and visitors			
Exposure to chemicals (Ethanol, Industrialised Methylated Spirit, Virkon)	Staff, students and visitors	<p>Via Inhalation: Where possible stock will only be available in solution, where powder form is unavoidable, users must weigh out and dissolve the chemical in a fume hood.</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>See specific COSHH risk assessment for each chemical.</p>	Medium	Checks on LeV
Strong magnetic field	Staff, students and visitors	The MidiMACS Separator is equipped with an extremely powerful magnet. Its magnetic field can damage computers, watches, electronic storage media, and other objects sensitive to magnetic fields. Never allow the MidiMACS Separator to be closer than 30 cm to any magnetically sensitive object.	Low	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).