NDMRB-RA-028

Risk Assessment: Vacuum pumps

Scope

Vacuum pumps are of various kinds. The most common are oil rotary pumps and oil (or more rarely mercury) diffusion pumps of glass or metal. Others include peristaltic pumps such as the Masterflex system. This assessment covers the use of pumps and also their maintenance.

A decontamination form must be completed before the equipment can be repaired. The pump must also be free of hazardous materials. . Operating instructions for vacuum pumps is outside of the scope of this document.

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).

Name of assessor:	Andrea Keepence-Keyte	**Date of Assessment:**	June 2014	**Review Date:**	Every 3 years

Risk Matrix:

Risk Matrix		Likelihood			
		High	Medium	Low	Negligible
Consequence	Severe	High	High	Medium	Effectively Zero
	Moderate	High	Medium	Medium/low	Effectively Zero
	Insignificant	Medium/Low	Low	Low	Effectively Zero
	Negligible	Effectively Zero	Effectively Zero	Effectively Zero	Effectively Zero

Risk Assessment:

Hazard (Cause and consequence)	Affected Groups	Existing controls	Risk	Further Action
Vacuum Pump Vacuum pumps are electrically powered apparatus. Belt driven rotary pumps present danger of entrapment in the moving belt and pulley wheels. The exhaust of rotary pumps may be contaminated chemically but will also contain an oil mist from the pump itself. There is a danger of explosion if the exhausts of rotary pumps that are pumping large volumes of air or other gas are blocked or obstructed. Injury due to entrapment of fingers in the rotor mechanism of peristaltic pumps.	Staff/students	The usual precautions must be taken when using electrical equipment Rotary pumps must have belt guards to prevent entrapment. A trap (either a cold trap or molecular sieve) should be used between system and pump to prevent contaminants reaching the pump oil or being exhausted into the laboratory. The exhausts of rotary pumps must be free from obstruction. Exhaust lines must be vented to a fume hood by tubing of large enough cross section not to cause obstruction. For peristaltic pump systems, the rotor is partially exposed when the loadng lever is in the open position. Turn the drive off before removing, installing or repositioning tubing.	Medium	Training to be provided before anyone uses vacuum/peristaltic pumps
Vacuum Pump Oil Pump oil possibly contaminated with solvents, mercury, corrosive or obnoxious substances.	Staff/students	As far as possible, pump oil should be drained with the pump in a fume hood. Appropriate gloves and a lab coat must be worn. If there is any suspicion of contamination, the oil must be treated as hazardous waste. Pumps left for service by technical staff should bear a warning about	Medium	None

		possible oil contaminants and the pump should be drained and flush with clean oil before allowing technical staff to handle the pump.		

Signed By Author:

Approved by (sign and print):

Reviewed by:

Review date: