**Manchester Institute of Biotechnology - Risk Assessment Form**



| **Date:**  25/02/15 | **Assessed by**:  Mr Arun Moorthy | **Validated by**:  Dr. Tanya Aspinall | **Location**: MIB G.052 | **Review date:**  24/02/16 |
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| **Task**:  Use of nanoparticles (Carbon nanotubes and graphene oxide) in rheological and microfluidic testing  \*Hazards associated with the use of nanoparticles are not fully characterised. A precautionary approach, following COSHH guidelines has been implemented. This RA details the control measures to be followed for this type of work. |
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| **Activity** | **Hazard** | **Person(s) in danger** | **Existing measures to control risk** | **Risk rating** | **Result** |
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| Forming a solution of carbon nanoparticles from powdered form and subsequent usage. | Biopersistant nanoparticles can enter the lungs when in aerosol form and are thought to be able to cross the skin barrier when in solution. The exact effect on the body is unknown but there is a possibility that they could induce granuloma formation in the lungs (especially if the particles are long and inflexible). | All lab users | **All work with carbon nanoparticles must be completed in a fume cupboard**.  The following items of PPE must be worn: Howie-style laboratory coat, BS EN374 compliant gloves (nitrile; double glove) and BS EN166 compliant eye protection (chemical splash proof safety glasses). A selection of safety glasses and goggles are available from MIB Stores; users are advised to visit Stores and select eye protection which fits well and is comfortable to use. Regular lab inspections monitor the wearing of PPE; users found not to be wearing PPE when the risk assessment states that it must be worn will be subject to the MIB compliance policy.This will help reduce the chance of exposure via the skin or eyes.    Minimum quantities of material (less than 50µl) will be used.  Samples will always be in solution or in colloidal form and so transfer to the lungs by inhalation is unlikely. | L | A |
| Disposal of nanoparticle sample | Danger of exposure to nanoparticles if samples dry out or if colloidal samples are left to deteriorate | All lab users | The sample, will be placed into a labelled tube of aggregating solution if possible (this will cause the nanoparticles to aggregate so that they can longer enter the alveoli or cross the skin barrier). If no aggregating solution is available then the sample can be placed in a tube of water.  Any solid waste should be placed in two bags to ensure that none of the sample escapes or comes into contact with skin. It should be disposed of as toxic waste as this is the safest method until more comprehensive tests can be carried out. | L | A |
| Transport of biopersistant nanoparticle samples. | Danger of exposure to nanoparticles if the samples are spilled during transport. | All lab users | Samples and waste must be contained in a parafilm sealed screw top tube placed in a sealed plastic tub that is designated for transport of nanoparticle samples. | L | A |

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| **Authorisation by PI**  **I confirm that I have considered and understand the experiment and the associated hazards. I am satisfied that all of the hazards have been identified and that the control measures to be followed will reduce the risks to acceptable levels.**  **Print name: Signed:**  **Date:** |

**Declaration by researcher**

**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 PI**

**I confirm that the researcher who has signed below is competent to undertake the work. My counter-signature indicates that I am happy for the work to proceed.**

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| **Name (please print)** | **signed** | **PI countersignature** | **date** |
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