Nanosafety
CSIRO Materials Science and Engineering

Greg Haywood
July 2009
Developing a Risk Control Plan

Managing the Risks

Step 1 – Hazard Identification

Step 2 - Risk Assessment

Step 3 – Risk Control Plan

Step 4 – Review and Documentation
Risk Control Plan

Step 1 – Hazard Identification

Characterisation

• Surface area
• Chemical composition
• Physical state (powder, liquid, gas)
• Solubility
• Size distribution
• Charge
• Particle shape (rod, fibre, plate, spherical, crystal)
• Presence of contamination, chemical precursors or catalysts
Risk Control Plan

Questions.....

• Is the particle a ‘Dangerous Goods’ or ‘Hazardous Substance’?
• Is there a mandated workplace exposure limit (WEL)?
• Is the particle explosive when finely divided?
• Is the particle coated with a toxic substance?
• What are the exposure routes?
• Who is likely to be exposed to nanomaterials?
• What is the amount of materials that people could be exposed to?
• What is the duration and frequency of the exposure?
• Are exposure control mechanisms available?
Risk Control Plan

Avoiding exposure is the best way to reduce risk

Using Hierarchy of Controls -
Determine exposure routes and provide effective barriers preventing exposure

• Change the process – bind powders, use pastes, etc
• Enclose the process – fume cupboards, special cabinets, etc
• Mechanical ventilation and exhaust extraction
• Atmospheric filtration and air purification via HEPA filters
• SOP to avoid dust generation, minimise handling
• Respirators P2 or P3 filters
• Gloves
• Eyewear
• Protective Clothing
Consider.....

- Fire and explosion prevention
- Health monitoring
- Waste disposal
- Cleaning and maintenance
- Spill control
- Emergency response
Risk Control Plan

Step 4 – Review and Documentation

Safe System of Work
- Induction
- Training
- Supervision
- Audit and review

Continual improvement
CSIRO
Greg Haywood
HSE Manager
CSIRO Materials Science and Engineering

Phone: +61 3 9545 2870
Email: Gregory.Haywood@csiro.au

Thank you

Contact Us
Phone: 1300 363 400 or +61 3 9545 2176
Email: Enquiries@csiro.au  Web: www.csiro.au