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Risk Level

Risk Level	Material State	Type of Use	Examples
Category 1 Lower Exposure Potential	Solid: Bound in a substrate or matrix Liquid: Water-based liquid suspension or gels Gas: No potential for release into air (when handling)	No thermal or mechanical stress	Non-destructive handling of solid engineered nanoparticel composites or nanoparticles permanently bonded to a substrate.
Category 2 Moderate Exposure Potential	Solid: Powders or pellets Liquid: Solid-based liquid suspension or gels Gas: Potential for release into air (when handling)	Thermal or mechanical stress induced	- Pouring, heating, or mixing liquid suspensions, or operations with high degree of agitation invovled - Weighing or transferring powders or pellets - Changing bedding out of laboratory animal cages
Category 3 Higher Exposure Potential	Solid: Powders or pellets with extreme potential for release into air Gas: Suspended in gas	N/A	- Generating or manipulating nanomaterials in gas phase or in aerosol form - Furnace operations - Cleaning reactors - Changing filter elements - Cleaning dust collection systems used to caputre nanomaterials - High speed abrading/ grinding nanocomposite materials

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Risk Level (continued)

	Category 1	Category 2	Category 3
Engineering Controls	***Fume hood or biosafety cabinet:*** Perform work with open containers in liquid suspension or gels in a laboratory-type fume hood or biosafety cabinet, as practical.	***Fume hood, biosafety cabinet, or enclosed system:*** Perform work in laboratory-type fume hood or biosafety cabinet (must be ducted in conjunction with volatile compounds), powder handling enclosures, or enclosed system (i.e. glove box)	***Enclosed system:*** Perform work in enclosed system (i.e., glove box, glove bag, or sealed chamber)
Work Practices	***Storage:*** Store in sealed container and secondary containment with other compatible chemicals. Label container with identify of content, including the word “nano” ***Preparation:*** Line workstation with absorbent materials ***Transfer:*** Transfer between locations in sealed containers with secondary containment ***Housekeeping:*** Clean all surfaces potentially contaminated with nanomaterials at the end of each operation with HEPA vacuum or wet methods. DO NOT SWEEP or use compressed air ***Hygiene:*** Wash hands frequently	***Follow all Category 1 Work practices, including:*** ***Access:*** Restrict access to authorized individuals ***Signage:*** Post signs in the workplace ***Materials:*** Use anti-static paper and/ or sticky mats when handling powders	***Follow all Category 2 Work practices***
Personal Protective Equipment (PPE)	Safety glasses with side shields; face shield where splash potential occurs; disposable gloves; laboratory coat; long pants; closed-toe shoes	Chemical splash goggles; two layers of disposable, chemical-resistant gloves; lab coat made of non-woven fabrics with elastic at the wrists (Tyvek); closed-toe shoes with disposable shoe coverings; proper respriatory protection may be necessary	Wear all PPE listed in Category 2, including: disposable Tyvek-type coveralls with head coverage and proper respiratory protection may be necessary. Consult EHS for assistance.

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Work Practice Controls

Category 1 Work Practices	Category 2 Work Practices	Category 3 Work Practices
• Store in sealed container with secondary containment with other compatible chemicals • Label chemical container with the identity of contents and include the term “nano-” as descriptor • Transfer in sealed container with secondary containment • Prepare workspace by lining with absorbent materials • Clean all surfaces potentially contaminated with nanomaterials at the end of each operation using a HEPA vacuum and/or wet methods • Wash hands frequently. Upon leaving the work area, remove any PPE worn and wash hands, forearms, face, and neck • Notify in advance of animal facility and cage labeling/management requirements if dosing animals with nanomatierals	• Follow all work practices listed in Category 1 INCLUDING: • Restrict access to workspace • Post signage in appropriate areas • Use anti-static paper and/ or sticky mats when handling powders	• Follow all work practices listed in Category 2