Safe Working Procedure for Nanomaterials

Nanomaterials generically refer to nano-objects as well as their aggregates and agglomerates, which include nanoparticles, nanofibres, nanopowders, nanotubes, nanowires, etc. Since there is considerable uncertainty about many aspects of risk assessment of nanomaterials, including the hazardous potential of many types of nanoparticles and the levels below which individuals might be exposed with minimal likelihood of adverse health effects, this guide recommends a cautious strategy for handling and disposing of nanomaterials.

General approach to managing risks from nanomaterials

A general risk assessment comprises the following main steps:
(1) Identify the hazards and assess the risks;
(2) Decide what precautions are needed;
(3) Prevent or adequately control exposure;
(4) Ensure that control measures are used and maintained;
(5) Monitor the exposure;
(6) Prepare plans and procedures to deal with accidents, incidents and emergencies; and
(8) Ensure researchers are properly informed, trained and supervised.

Disposal procedures for nanomaterials

The following are appropriate approaches for collection and storage of nanomaterial waste prior to disposal.
(1) Storage in waste containers. Package nanomaterial-bearing wastes in compatible containers that are in good condition and afford adequate containment to prevent the escape of the nanomaterials. Label the waste container with a description of the waste.
(2) Storage in plastic bags. Collect paper, wipes, and other items with loose contamination in a plastic bag or other sealable container stored in the laboratory hood. When the bag is full, close it and carefully place it into a second plastic bag or other sealing container, avoiding outside contamination. Take it out of the hood and label the outer bag with an appropriate waste label.

Spillages and accidental releases

Personnel who might be required to deal with such events should receive adequate information, instruction and training on assessing the extent of any spill/accidental release, the clean-up measures to be taken, and the personal protective equipment (PPE) which should be worn, as well as guidance on the safe disposal of any waste collected during the clean-up.

In the event of a spillage or accidental release, on-site personnel should determine the extent of the area potentially affected and demarcate the area to restrict access by non-essential personnel. Measures should also be put in place to reduce the likelihood of spreading nanomaterials from the affected area.

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