



The University of Hong Kong

SAFETY MATTERS

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To: Faculties of Dentistry, Engineering, Medicine and Science
Deans
Heads of Departments/Centres/Units
DSRs



Safe Use of Cryovials



Cryovials are commonly used in the laboratory for the storage of biological materials in liquid nitrogen. In the past few months there have been several incidents in the University involving exploding cryovials, one of which injured the individual concerned. Explosion can happen when liquid nitrogen leaks into a poorly sealed vial and rapidly expands after the vial is removed from the liquid nitrogen (it expands to about 700X its liquid volume). The recent incidents appeared to have involved vials that lacked o-rings and were not approved for cryopreservation. In order to minimize or eliminate the risk of serious physical injury and/or release of infectious materials, the following guidelines are strongly recommended:-


1. Only use cryovials certified by the manufacturer as appropriate for use with liquid nitrogen. These are generally high density polyethylene or polypropylene with caps and silicone or rubber o-rings. Tubes such as the purple-capped one shown below or glass equivalents must not be used.
2. All vials should have a silicone / rubber washer or o-ring for a secure seal (see the picture below). Please note that over tightening of the vial cap could distort the sealing ring.



Left - Tissue culture tube not for cryogenic storage (purple cap)

Middle - Cryovial with female cap and silicone washer

Right - Cryovial with male cap and silicone O-ring

3. All biological samples in cryovials should be stored in the vapor phase of liquid nitrogen.
4. If samples must be stored in the liquid phase, use a sleeve available from various scientific vendors (e.g. NUNC Cryoflex®) that gives an extra external seal. 
5. Treat all vials as having the potential to explode. Wear appropriate protective equipment including cryogenic gloves, a splash-resistant lab coat or apron, and a face shield during retrieval and thawing of the samples.

Please contact our Biological Safety Officer, Dr. Mike Mackett, if you need further information on the safe use of cryovials.



Dr. Edmund Hau
Director of Safety

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