



APPENDIX 11

**FIRE SAFETY REQUIREMENTS FOR CONTAINMENT FACILITY
(BIO-SAFETY LEVEL 3 / 4)****SCOPE**

- 1 The scope of this Fire Safety Guidelines covers the fire safety requirements for containment facility or laboratory that handles biological agents or toxins, designed to meet the WHO and MOHQL's requirements for Bio-Safety level 3 (BSL 3) or higher.

DEFINITIONS

- 2 “**Biological Agent**” means any microbial or other biological agent, whatever its origin or method of production
- 3 “**Toxin**” means any toxin, whatever its origin or method of production.
- 4 “**High Containment Facility**” refers to containment laboratory of Bio-safety Level 3 and maximum containment laboratory of Bio-safety Level 4 (WHO, 2004)¹(it includes interstitial space, waste treatment area and anteroom etc). They are designed to comply with the WHO and MOH's requirements for storing or handling of biological agents.
- 5 “**Anteroom**” is the proceeding room leading into the BSL-3 or BSL-4 containment laboratory. This room is for showering and changing. It is also served as a containment facility in controlling of air flow and providing additional physical containment between the laboratory and adjoining spaces.

¹. Laboratory Bio-safety manual (2004), third edition, World Health Organization

GENERAL REQUIREMENTS

- 6 BSL 3 or BSL 4 containment laboratory shall preferably be located at the ground floor and shall be separated from areas that are open to unrestricted traffic flow within the building. They shall be designed and constructed to comply with the requirements listed herein, and the requirements of other relevant authorities, such as WHO, MOHQL NEA, etc.
- 7 The word “BSL-3” or “BSL-4” shall be stated clearly in the project title and printed on the top-right corner (lettering shall be bold, in red colour and at least 15mm in size) of all the fire safety plans of the high containment facility.



FIRE COMPARTMENT

- 8** In sprinkler-protected building, the high containment facility shall be fire compartmented (it include interstitial space, waste treatment area, anteroom, etc.) from adjoining spaces with at least one-hour fire rated walls, floor and ceiling. For non-sprinkler-protected building, the fire rating shall be at least two hours.
- 9** The protecting structure shall be constructed of masonry or drywall. If drywall construction is used, it shall comply fully with clauses 3.8.7(c) (i) to (iv) of the Fire Code.

FIREMAN STAGING LOBBY

- 10** Entry to the high containment facility shall be either through a fire compartmented lobby or an anteroom having at least 1-hour fire rating. The anteroom can also be doubled up as the fireman staging lobby and both shall have a free working space of at least 6 m² in size. This additional fireman staging lobby shall comply fully with the clauses 2.2.13(b), (b)(i) and (b)(ii) of the Fire Code- A designated rising main landing valve, complete with standby fire hose, and fire hose reel shall be installed within the fireman staging lobby.

TWO-WAY EMERGENCY COMMUNICATION SYSTEM

- 11** For biomedical facility or building provided with two-way emergency voice communication system, the two-way communication system shall be extended to the fireman staging lobby.

FIRE DETECTION AND SUPPRESSION SYSTEMS


- 12** All containment facilities shall be protected with sprinkler system. In a non-sprinkler-protected building, smoke detectors shall be installed along the exterior of the periphery walls of the-containment facility. The fire protection circuit for containment facility shall be grouped in a different fire zone for ease of identification. The fire protection systems shall be linked to the building fire alarm system and shall be connected to fire station through an approved alarm monitoring station. If water discharge within the high containment facility is undesirable or unacceptable, the sprinkler system may be replaced by an approved fire extinguishing system.

LABEL AND SIGN

- 13** A label indicating the information as shown in Annex A shall be also provided at all laboratory entrances and exits.
- 14** A sign of the following wording “In the event of fire or any water discharge, please notify the MFRS **on 115 for** control of contaminated water run off.” Shall be displayed at all entrances to the high containment facility.



Annex A



BIOHAZARD

ADMITTANCE TO AUTHORIZED PERSONNEL ONLY

Biosafety Level: _____

Responsible Investigator: _____

In case of emergency call: _____

Daytime phone: _____ Home phone: _____

Authorization for entrance must be obtained from the Responsible Investigator named above.

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