Destinatari: Tutto il personale abilitato all'accesso all'area P3 in EBPU

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1 SCOPE

This IOS describes hygiene and safety measures for worker protection against laboratory-acquired tuberculosis in the event of an accidental spill of infectious material outside the biological safety cabinet (BSC).

2 APPLICATION

This IOS refers to spillage of liquids consisting of suspensions of tubercle bacilli or broken tubes of cultures on solid media which generate infectious aerosols and represent a potential hazard for laboratory-acquired tuberculosis.

3. DEFINITIONS AND ABBREVIATIONS

Accident: An undesired event giving rise to death, ill-health, injury, damage, loss or distress

Incident: An event that gives rise to an accident or has the potential to lead to an accident.

GMT: good microbiological technique: working methods designed to eliminate or minimize exposure to pathogens via, for example, aerosols, splashes, ingestion, absorption, accidental inoculation.

BSC: biological safety cabinet
BSL: biosafety level
CDC: Centers for Disease Control and Prevention
FFP : filtering facepiece particulate
HEPA: high-efficiency particulate air
NIOSH: National Institute for Occupational Safety and Health

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4. RESPONSABILITY

Direct supervision of the incident and the application of all emergency procedures is supervisor's duty.

5. EQUIPMENT AND MATERIALS

Emergency spill-kit, stored outside the laboratory but close to the laboratory entrance, containing the following :

- At least FFP2 filtering face piece particulate respirators (meet the requirements of European Standard EN149 and are CE-approved) or N95 filtering face piece particulate respirators (meet the requirements of US Standard 42CFR84 and are CDC/NIOSH-approved), at least 10;
- overshoes, at least 10 pairs;
- autoclavable plastic bags, 1000 x 700 mm, with biohazard sign, at least five;

- thick-walled household rubber gloves (to pick up shards and sharps), at least two pairs
- latex gloves, one package each of medium and large;
- forceps or tongs;
- container for sharps;
- absorbent paper tissue, at least 500 x 500 mm, about 1 kg
- concentrated disinfectant for dilution;
- bottle with spray head, 1-litre capacity;
- alcoholic disinfectant or equivalent, 1 litre.
- Disinfectants (and procedures for their use) according to national guidelines.

6. PROCEDURE

- The laboratory worker who caused or noticed the accident must alert all other persons present (in the vicinity of the emergency spill situation) and order them to evacuate the laboratory.
- Once outside the laboratory, preferably in the anteroom, ensure that all workers previously working in the area have now vacated the laboratory.
- Workers must remove protective clothing, specifically gowns that may have been splashed during the spill (and shoes in case of walking across the contaminated floor area).
- Workers need to wash whatever parts of their bodies have been splashed, with water and soap. Apply appropriate skin disinfectant on wounds, cuts and abrasions (see SOP on the use of disinfectants). Seek medical attention as necessary.
- Place the DO NOT ENTER warning sign on the door of the laboratory.
- Notify the laboratory supervisor of the accident, giving as much information as possible on the location, nature and extent of the accident, as well as any possible contamination of equipment.
- On the basis of this information, the head of the laboratory must decide how and when the decontamination will be carried out, and by whom. In biosafety level 3 laboratories, with rooms sealable for decontamination and air-ducting systems constructed to permit gaseous decontamination, fumigation the laboratory may be considered and must be carried out only by a certified professional.
- When fumigation of the room is not necessary, the laboratory supervisor must determine the minimum time necessary for infectious aerosols to be cleared from the laboratory, taking into consideration the number of changes of air per hour. The minimum time that must elapse before *anyone* re-enters the laboratory should be 2 hours.
- After the appropriate time, prepare to re-enter the laboratory to disinfect the contaminated area. Assemble a clean-up team of at least two persons. Put on protective clothing including gown, thick rubber gloves for protection against cuts from glass debris, overshoes, goggles and a single-use disposable FFP2/N95 or FFP3/N100 respirator. Re-enter the contaminated area and assess the extent of contamination.

- Spilled infectious substances and broken containers contaminated with infectious substances should be covered with absorbent tissue. Disinfectant should then be poured over. If walls have been splashed, disinfectant solution should be sprayed or poured onto the contaminated surfaces which are then covered with a layer of absorbent tissue.
- Allow adequate time for disinfection – a minimum of 2 hours.
- Once disinfection is completed, the waste can be discarded into suitable waste containers. Sharp-containers should be used for glass debris and other sharps. Autoclavable bags are suitable for the other waste (single-use disposable respirator and overalls, overshoes, absorbent tissue, etc).
- Laboratory gowns are decontaminated using the standard procedure. The thick rubber gloves should be discarded if damaged; otherwise they can be disinfected. If splashed, goggles must be cleaned with disinfectant.
- If laboratory forms or other printed or written materials are contaminated, the information should be copied onto other forms and the originals discarded in the waste container.
- All contaminated equipment should also be wiped with a suitable disinfectant. Removable parts should be washed with water and dried. Electric equipment should be checked carefully (integrity of circuit-breakers and earth-fault-interrupters) before use.
- The clean-up team leaves the laboratory ensuring that all items of protective clothing, including respirators, have been removed. Once all contaminated material has been appropriately disposed of and the area adequately decontaminated, the DO NOT ENTER warning sign can be removed from the door.

7. SAFETY

All materials used in the clean-up should be treated as infectious waste. Contaminated-waste containers should be autoclaved.

8. REPORTING

Every incident/accident must be documented and records must be kept in the laboratory supervisor's archives. All corrective action must be similarly documented. The list of workers present in the laboratory when the incident occurred must be sent to the relevant medical service, together with documentation of the incident, for further medical surveillance.

9. RELATED DOCUMENTS

Biosafety in microbiological and biomedical laboratories, 5th ed. Washington, DC, 2007. United States Department of Health and Human Services/Centers for Disease Control and Prevention/National Institutes of Health, 2007.

Collins C, Kennedy D. Laboratory acquired infections: history, incidence, causes and prevention, 4th ed. Oxford, Butterworth-Heinemann, 1999.

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Health Services Advisory Committee. Safe working and the prevention of infection in clinical laboratories. London, HSE Books, 1991.

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Manual of basic techniques for a health laboratory, 2nd ed. Geneva, World Health Organization, 2003.

Standards Australia/Standards New Zealand. Safety in laboratories - microbiological aspects and containment facilities. Sydney, Standards Australia International, 2002.