

Guidelines for human tissue handling and characterization in laboratories

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1. Introduction

Sterilization, disinfection, and decontamination are extremely important when handling and characterizing human tissue samples in the labs of the Department of Materials Science and Engineering at City University of Hong Kong. It is to protect researchers, lab staff and lab instruments.

Using high pressure, high temperature and steam such as autoclaving is the most effective and reliable method for sterilization, disinfection, and decontamination, so it should be used in preference to chemical approaches. If this is not possible in some situations alternate approaches can be considered.

2. Responsibilities and Policy

It is the sole responsibility of the user to ensure and certified that the human tissue samples are properly sterilized, disinfected and decontaminated before it can be brought into the laboratory.

The department of and Materials Science and Engineering does not provide materials, facilities, personnel and expertise nor responsible for the treatment of these samples.

The department of Materials Science and Engineering reserves the right to refuse the examination of any samples that deems potentially harmful to the lab personnel and/or the equipment.

3. Definitions

(adopted from Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008 in the Center of Disease Control of the USA & University Guidance of Decontamination of the University of Hong Kong)

3.1. Sterilization

Sterilization describes a process that destroys or eliminates all forms of microbial life and is carried out in health-care facilities by physical or chemical methods. Steam under pressure, dry heat, EtO gas, hydrogen peroxide gas plasma, and liquid chemicals are the principal sterilizing agents used in health-care facilities. From an operational standpoint

sterilization is defined as a process, after which the probability of a microorganism surviving on a treated item is less than one in one million (10^{-6}). This is sometimes referred to as the "sterility assurance level."

3.2. Disinfection

Disinfection describes a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects.

3.3. Decontamination

Both disinfection and sterilization are methods of decontamination as this is the general term used to reduce microbial contamination to render an item "safe". Cleaning may also be regarded as a decontamination method as it too can remove micro-organisms from a soiled surface or other materials which may contaminate lab instruments.

4. Guidelines

- 4.1. All human tissue samples need to be properly sterilized, disinfected, and decontaminated before being brought to the labs according to the definitions of sterilization, disinfection, decontamination.
- 4.2. Certificates of proper sterilization, disinfection, and decontamination of the samples need to be issued by an authority.
- 4.3. Samples should be properly sealed and transported to the labs. To ensure this, the sterilization, disinfection, and decontamination of the samples need to be checked by biological and chemical indicators (e.g., Spore Strips including *Bacillus atrophaeus*, *Bacillus atrophaeus*, *Geobacillus stearothermophilus*). One technician will be trained and appointed to perform the examination.
- 4.4. Samples should be properly fixed according to routine histological specimen preparation and be dehydrated (Appendix) before characterization and analysis in the labs.
- 4.5. The sterilization, disinfection, decontamination, fixation, and dehydration procedures of the samples need to be investigated.
- 4.6. Human Ethical Review Forms of the City University of Hong Kong need to be filled and approved by the City University of Hong Kong Research Committee.