

## Plan and design for food and microbiology laboratory

location:

1. Laboratory should be selected in a clean and quiet place, away from the living area, boiler room and transportation arteries; 2. Laboratory should choose well lit, well-ventilated place, production and processing plant with a certain distance; 3. laboratory should be selected for sampling and testing at a convenient distance closer to the workplace workshop.

Second, structure and layout:

According to the actual needs of production, general plant should be set to both bacteria and integrated physical and chemical testing laboratories, including the following three parts: bacteria laboratory, chemical laboratory, office.

1. The office 2. Physical and Chemical Analysis Laboratory: (or and bacteriological examination and operation rooms combined) ① Physical and Chemical Analysis room (doubles as a sensory laboratory) ② instrument room (room microscope, bacteria and put a small device) 3. Bacteria Lab: ① bacteriological examination and operation rooms; ② sterile room; ③ media production studios; ④ washing disinfection of rooms;

General layout of the following:

1. Office: Office is the original records, and other laboratory personnel in the work place, non-laboratory personnel exchanges with more sites, therefore, be located in the outermost layer of the overall integrated laboratory, just a table and chairs and other facilities can be simple.

2. Bacteriological examination and operation rooms (conventional operation) bacteriological examination and operation rooms are bacterial cultures and testing the main operations room, the main facilities bench.



Requirements on the test bed: a. bench area generally not less than 2.4 × 1.3m; b. bench center position should be in the lab, there must be sufficient light; also doing sets. c. test bed installed on both sides and tap small cup; d. middle bench set reagent racks, shelves equipped with fluorescent lights and sockets; e. bench material necessary to heat, acid and alkali is appropriate.

3. Sterile room: clean room space through the air purification and disinfection of the microbial experiments provide a relatively sterile work environment, sterile processing of samples and inoculation chamber is the main workplace culture, bacteriological examination should be closely operating room connected. Sterile room to meet the requirements of sterile rooms should meet the following layout: a. avoid the entrance corridor, located in the operating room bacteriological examination; b. operating room with a buffer with two spaced; c. sterile room with a buffer rooms are equipped with a UV lamp, required every 3 square meters installed 30w UV lamp 1; d. sterile indoor bench with the central (experiment set and edge sets are acceptable), ultraviolet light from the test table is less than 1.5m; e . sterile room and operation room with double windows form between the small channel.

4. Medium Studio: media room is the production, preparation of microbiological culture media and test reagents needed to place, the main device side should be set and medicine cabinet.

a. side of the stage to place the stove to boil the culture medium used to meet the melting; b. side of Taiwan-resistant material to heat, acid and alkali; c. Drug store counter some of the general category, drugs and reagents; d. dangerous, perishable flammable poisonous drugs Alone safe storage; e. side table to put scale to weigh drugs used.

5. Sink sterilization: sterilization chamber to sterilize the sink , sink stand-by and has been used glassware, media and dirt, the area should be larger than 10m<sup>2</sup>.

To meet the functions of washing disinfection, washing disinfection chamber should have:

- a. 1-2 piece sink, sink down to the water network flow; b. utensils rack or bench to place a good washing utensils;
- c. high-pressure sterilization pot, its power supply should meet the electricity load; d. An ventilated room (Fume) or ventilator;
- e. The unit can also be conditional in that room, located distilled water daily inspection of devices available for installation.

6. Physical and Chemical Analysis of Room: (if not conditions, this can be routine microbiological laboratory combined) physical and chemical analysis of physical and chemical analysis of the room is the main operation room a. bench and asked the same b. bacteria operations room set up to meet the heating fume hood, digestion, drying, burning and chemical processing requires; c. sink.

7. Instrument Room: If there are no conditions, this can be combined microbiological laboratory routine to place the microscope, electronic balance, and physical and chemical analysis using a small instrument; a. demands clean and dry, moisture pest control, dark; b. equipment sets to a solid , solid.

For small business laboratory, if no more room to differentiate, should be able to partition the room through the planning to ensure the laboratory work in different area (clean area and the general operating area) must distinguish between, therefore, should be guaranteed at least 4 rooms or 4 partitions.

1. Washing disinfection area, the relatively independent regional requirements, the best interval to the room, because this area of waste disposal, pollution and humidity to a certain extent. 2. Media preparation area, preparation for the medium, often water, requires a number of relatively independent. 3. Normal operation region, this is the main operating area, microbiological test results of observation, microscope operation, generally simple physical and chemical

operations, equipment, and can be combined in this room or the region. 4. Aseptic areas, sterile room, the demand independence.

Third, general instruments and equipment (a specific lab instruments and equipment according to the requirements of your choice)

1. Incubators: mainly used for laboratory cultivation of microorganisms for microbial growth to provide a suitable environment. 1) General incubators: the general control of the temperature range: room temperature +5 ~ 65 degrees, is divided into electric thermostat at constant temperature incubator and impermeable. 2) Biochemical Incubator: General control of the temperature range: 5 ~ 50 degrees. 3) constant temperature and humidity box: General control of the temperature range: from 5 to 50 degrees, humidity control range: 50 ~ 90%. As a mold incubator. 4) anaerobic incubator: For the cultivation of anaerobic microorganisms.

Two. Electric oven: for straw, dry glass plate type heat sterilization and baking.

3. Autoclaves (also known as high-pressure sterilization pan): articles of sterilization. 4. Fridge: 5. Electronic balance: general requirements with accuracy of one ten thousandth of the analytical balance. 6. Microscopy: To observe the shape and dynamics of bacteria, microbes and micro-structure of the essential equipment items. 7. Homogenizer: For homogeneous samples, with a rotating blade and slap-style choice. 8. Distilled water device: to provide distilled water 9. Water bath: Some training needs of the water bath temperature (such as E. coli testing)

10. Clean Benches: Laminar flow cabinet for sterile room instead of a device, easy to use for the experiment carried out to provide a relatively sterile console. Clean the work of Taiwan's squad, according to the wind direction is divided into horizontal and vertical.

Other devices may be used: pressure cooker, anaerobic training equipment, centrifuges, oscillator, oven, constant temperature water bath, colony counter,

potential pH meter, high-speed centrifuge and other equipment.

4, the conventional glass

1. Pipette: for drawing a small amount of liquid, the straw used for the 0.1 scale and 1.0 scale 10mL 1mL straw. 2. Dish: for the hard glass platter, commonly used in the isolation and culture, cover and base size should be appropriate, common specifications for the 90mm. 3. Flask and the jar: Multi-media and preparation solution for holding, common specifications 250mL, 500mL, 1000mL. 4. Beaker: Holding solution or boiled for use, common specifications for the 100mL, 250mL, 500mL, 1000mL 5. Cylinder: for liquid measurement, common specifications for the 100mL, 250mL, 1000mL 6. Tube: for bacterial culture, how specifications. 7. Slide covers-lip: bacterial smears with observation. 8. Reagent bottle: loaded with reagents, often dark brown 9. Others, such as test tube racks, brush, alcohol lamps, inoculation needles, ring vaccination

5, chemical reagents and culture media of chemical reagents and culture medium: the light of the implementation of standards in the appendices to purchase the necessary reagents and culture media, currently used for the synthesis of powder over medium, the reagent can also be purchased to the standard reagents.