

BT: 605

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Subjective:

1. define biosafety?

Answer:

- prevention of large-scale loss of biological integrity,
- prevention mechanisms,
- conduction of regular reviews

2. facilities of bsl 3 lab?

Answer:

Applicable to diagnostic / clinical/ research/ production/teaching facilities

- potentially lethal disease through the inhalation route
- all procedures must be performed in a biosafety cabinet

3. Define biosafety level ?2 mark

Answer:

Definition: level of containment precautions

- isolate dangerous biological agents
- enclosed laboratory facility
- containment level (BSL-1 to BSL-4)

4. Describe elements of surveillance? 2 mark

Answer:

- heat detector
- smoke detector
- lighting
- alarms
- cameras

5. which additional facilities in BSL4 as compared to BSL3. (2)

6. Define biosecurity (3)

Answer: A set of preventive measures designed to reduce the risk of transmission of infectious agents.

It can be

- increases the level of assurance
- honesty, trustworthy, loyalty with government resources
- reduces the risk of loss and damage

7. Functions of technical advisory committee (5)

8. Name protective equipment in first Aid. (5)

Answer:

Protective equipment in first Aid:

- mouth piece for mouth-to-mouth resuscitation

- gloves-protections
- clean up kit for blood spills

9. How risk can be reduced through risk management describe the logical process (5)

10. What are bioweapons.what are their biological threats and also explain the efforts of mitigate them (10)

Answer:

Bioweapons: It is defined as any infectious agent used intentionally to cause harm to others.Planning of an effective biowar defence-difficult task

Types:

1. Chemical weapons,
2. Radiological weapons,
3. Nuclear weapons

Defence against bioweapons:

- international cooperation
- transfer of technology
- support national actions

Biological threats:

- terrorist, non-state actors
- misuse of technologies
- theft from lab
- religious extremists
- locally hired agents
- frustrated cult

Efforts to mitigate:

- BTWC Act
- designation of focal point
- central implementation authori
- biosafety/biosecurity
- code of conduct /awareness

11. Duties of biosafety committe 3

Answer

- biosafety policies and code of practice
- review research protocols
- risk assessment formulation
- advice - sensitive discussion

12. What are potential threats of bioweapons 3

Answer:

Potential threats:

- naturally present in the environment
- no major infrastructure
- no man power
- easier and faster
- cover large area
- difficult to diagnose and treat
- high mortality and mobility
- create panic

13. Risks of ionizing radiation 5

Ionizing radiation

Risk:

- somatic effects: radiation induced cancers
- hereditary effects of radiation exposure to the gonads

Protection:

- minimize the time of exposure to radiation
- maximize the distance from the radiation source
- shielding the radiation source
- substituting with non-radiometric methods

Rules:

- radiation area
- work-bench area
- radioactive waste area
- emergency response

14. Measures require for TB lab?3 marks

Answer:

- codes of practice,
- equipment
- lab design and facilities,
- health surveillance,
- training,
- waste handling

Concepts: waste handling, incineration, autoclaving, disinfection equipment, work areas, equipment

15. Activities of biosafety officers.

Answer:

Biosafety officer:

- appointment
- ensure biosafety programs and policies
- small scale-technical staff
- microbiology, biochemistry, basic biological sciences

Duties

- apply National or International rules,
- regulations/guidelines
- assist lab in developing standard safety procedures
- knowledge of lab, clinical practices

16. Facilities and apparatus use in BSL1 labs? 2

Answer:

Laboratory facilities: doors for access control

- sink for hand washing
- bench tops-resistant
- chairs-easy to disinfect
- lab windows fitted with screens

Apparatus: Gloves, lab coats, protective eyewear

17. Surveillance and notification systems and Physical Security elements?3marks

Answer:

Physical security elements

- obstacles placed in the way of attackers
- surveillance and notification system
- methods to recover quickly from disaster

Surveillance/notification system:

- heat detector
- smoke detector
- lighting
- alarms
- cameras

18. What are the activates of human which change fresh water into sewage water? 2

Answer:

The activates of human which change fresh water into sewage water are domestic, agriculture, commercial, industrial,storm water, run off water

19. How the radiation effect minimized? 2

Answer:

Radiation effect can be minimize the time of exposure to radiation.

20. What are malicious risk groups, what are there abbreviations, explain it? (10)

Malicious risk groups:

- non-pathogenic -inherent hazardous
- no/insignificant consequence

Abbreviations**1- low malicious use risk (LMUR):**

- LMUR - low consequences
- most biological agents

Example:

- *Mycobacterium leprae*
- gram positive rods/ non-spore former
- organism grow slowly-generation time 30days
- not highly virulent (LMUR)

2- moderate malicious use risk (MMUR):

- MMUR-can't deploy as biological weapons
- low / moderate consequences
- low / moderate economic impact
- many current agents evaluated as MMUR
- cure without treatment/life-threatening cases

Example:

- *C.immitus* – fungus
- desert fever
- asymptomatic
- biosafety level 3-MMUR

3- high malicious use risk (HMUR)/extreme malicious use risk (EMUR)

- national/international consequences
- high casualties
- high economic impact
- *Bacillus anthracis*
- EMUR-HMUR
- not found in the nature
- high security measures
- eradicated
- genetically engineered agents

Examples:

- *Variola major virus*
- small pox
- highly virulent /contagious/stable in droplets
- eradicated by vaccine
- GM virus – more virulent

21. Application of biosafety rules?

Answer:

Application of National biosafety rules

- manufacture, import and storage of microorganisms
- gene technological products for research
- field trial of GMOs
- import, export, sale and purchase of GMOs

22. Japan biosecurity legislations?

Answer:

Japan biosecurity legislations

- Japan ministry of health, labor and welfare
- two pillars of biosecurity
- surveillance of infection and infectious agents
- regulations of pathogen handling

Duties:

- screening of foods, human, vectors at the point of entry
- Japan ministry of agriculture, forest and fisheries
- health issues-animals and plants
- bioweapon-prohibition laws

23. Objective of lab biosecurity?

Answer:

Objectives of lab biosecurity:

- this supports lab safety agenda to prevent diseases
- ensure containment of infectious materials
- maintain citizen confidence of bioscience research community
- transparency to investors in the industries
- protect valuable research and commercial assets
- reduce the risk of crime and bioterrorism

Mcqs

- 1- AFIA abbreviation? • **America Feed Industry Association**
- 2- Which is used as bioweapon **anthrax**
- 3- Cybernetic means “**governance**”
- 4- _____ is required to import/export /sale/purchase genetically modified food **License from federal agency**
- 5- Risk assessment scheme assess potential hazard **Scoring system**
- 6- Permission for food stuff is necessary for **ingredients of food stuff, additives, processing aid**
- 7- Function of biosafety collaborating counter is **Applied biosafety programs and training**

8- Fire extinguisher have **4 classes**

9- Favr savr tomato 1994 **genetically modified tomato**

10- Which is harmful for human lead, mercury, gold and **arsenic (not sure)**

11- To hack attacker are viruses worms and Torin horses and **all**

12- a suit laboratory personnel must wear positive pressure air protective suit **BSI4**

13- which is not fire

A. Heat

Oxygen

C. Fuel

D. Oil

14- Indian GMO's are also called **Alien species**

15- Obstacles are except

1. multiple locks

2. fireproof safes

3. water sprinkles

4. Lighting

16- treatment via gene therapy

1. Leukemia

2. Hemophilia

3. Down syndrome

4. cystic fibrosis

17- Internal transport is except

1. shipping

2. movement from / to restricted area within facility

3. involve persnol from lab

4. Carriers