Safety and biosecurity

Lecture.3

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Biosecurity in laboratories

Pathological agents may be collected, grown, stored or handled in clinical laboratories, diagnostic facilities, public health laboratories, research centers and production facilities. All of these facilities are at risk of biosecurity incidents.

The reduction of biorisk involves the sharing of expertise and advice regarding the guidance and training that is needed for disease agents to be handled and controlled safely.

The term “biohazard” refers to a biological substance that poses a risk to health, particularly human health.

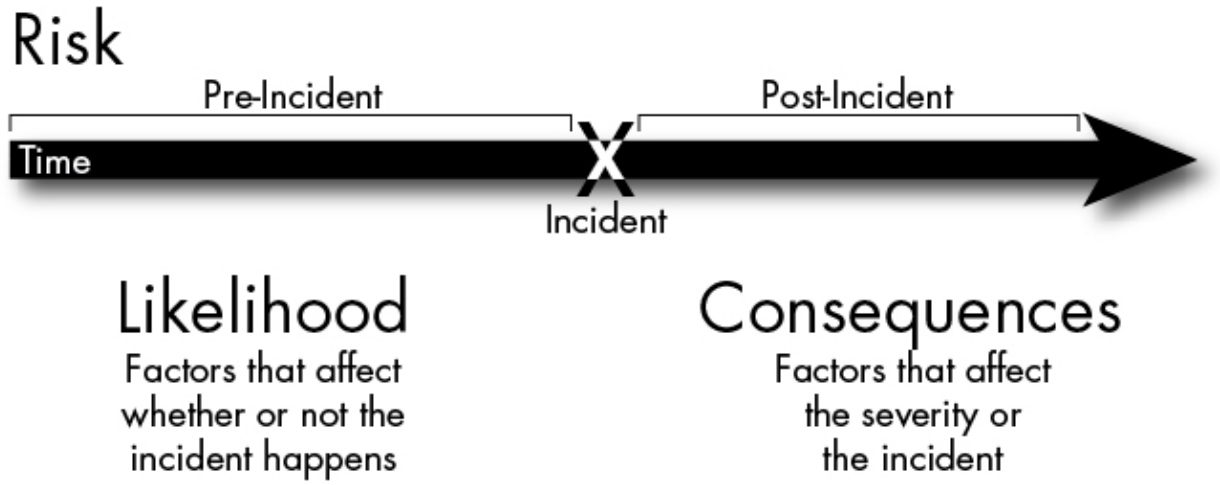
biosecurity concepts differ from biosafety concepts. The approaches used to achieve them are often similar or mutually reinforcing, but in some cases may conflict. A common example of conflict arises with the transport of dangerous pathogens: in the interests of biosafety, such pathogens should be clearly labeled during transport, but from a biosecurity perspective, labelling the pathogen being shipped may increase the risk of theft or diversion.

Laboratory Risks

A broad spectrum of risks may be present in a typical biological laboratory, including risks to individuals working in the laboratory, to the community, and to the environment.

To successfully mitigate these risks, it is critical to understand the components of risk. Risk, in general, is defined as a function of the likelihood an adverse event involving a specific hazard and/or threat will occur, and its consequences.

The likelihood of risk affects whether or not the incident happens, and thus precedes the event. The consequences of risk occur after the incident has happened and affects the severity of the incident.



Biosafety and it is related fields

ECOLOGY
AGRICULTURE
MEDICINE
CHEMISTRY
EXOBIOLOGY

ECOLOGY: referring to imported life forms not indigenous to the region (Reggie the alligator).

AGRICULTURE: reducing the risk of alien viral or transgenic genes, or prions such as BSE/"MadCow“; reducing the risk of food bacterial contamination.

MEDICINE: referring to organs or tissues from biological origin, or genetic therapy products, virus; levels of lab containment protocols BSL-1, 2, 3, 4 in rising order of danger

CHEMISTRY: i.e., nitrates in water, PCB levels affecting fertility

EXOBIOLOGY: i.e., NASA's policy for containing alien microbes that may exist on space samples - sometimes called "biosafety level 5