INTRODUCTION

- Biological agents are living organisms or products of living organisms.
- They include viruses, bacteria and fungi and their metabolites, as well as parasitic worms and plants.
- Micro-organisms are found virtually everywhere in the natural environment.
- However, certain micro-organisms can cause disease and employees might be exposed to them at work, either intentionally or not.
- In health care institutions, employees are exposed to hazardous biological agents because of their interaction with patients suffering from various infectious diseases.
vibrio cholerae under microscope

Example of an HBA
Introduction

The routes of entry

- Skin Absorption
- Inhalation
- Ingestion
- Injection
If the living conditions are favorable, viruses, bacteria and fungi can reproduce very rapidly in a very short time.
Classification of the HBAs

• In terms of the Regulations for HBAs, they are divided into 4 groups, namely;
• Group 1 HBA – unlikely to cause human disease;
• Group 2 – may cause human disease and be a hazard to exposed persons, but unlikely to spread to community and effective prophylaxis available e.g. hepatitis B virus;
• Group 3 – may cause severe human disease, which presents a serious hazard to exposed persons and may spread to the community, but effective prophylaxis is available, e.g. mycobacterium tuberculosis; and
• Group 4 – causes severe human disease and is a serious hazard exposed persons, present a high risk of spreading to the community, no effective prophylaxis available, e.g. ebola virus.
Hazards generated by HBAs

- HBAs are infectious and toxic, but they can also cause allergic reactions such as hypersensitivity pneumonitis, allergic rhinitis, some types of asthma and organic dust toxic syndrome.
- Infection at the workplace can occur via:
  1. Blood and body fluids
  2. Human bodies, animal carcasses and raw meat
  3. Human or animal waste products such as faeces or urine
  4. Respiratory discharges such as coughs and sneezes
Workplaces with potential exposure to HBAs

- Food production plants
- Agriculture
- Activities where there is contact with animals and/or products of animal origin (abattoirs)
- Health care including isolation and post-mortem units
- Refuse disposal plants (waste handling and sorting plants)
- Sewage purification installations
1. An employer needs to conduct a risk assessment
   • A risk assessment is a means of determining the risks associated with work with a particular hazard in the workplace. It is mostly broken down into 5 steps:
   i. Hazard identification;
   ii. Who is at risk from the hazard and how harm could arise;
   iii. Assessing how likely it is that harm will arise and whether existing control measures are adequate;
   iv. Making a record of findings, including the control measures selected and any action identified as necessary to reduce risks of exposure further;
   v. Reviewing and revising the assessment as necessary

Management of HBAs
• To inform the health and safety representative or health and safety committee in writing of the arrangements made of the assessment;

• Ensure that results of the assessment are made available to the relevant health and safety representative or committee and may comment thereon;

• Risk assessment should be conduct by a competent person.

• Risk assessment should be a living document and should reflect any changes in the work that is being done.
Every employer shall ensure that before any employee is exposed to HBA, he/she is adequately and comprehensively informed and trained with regard to:

i. The contents and scope of the Regulations for HBA;
ii. Potential risks to health caused by the exposure;
iii. Measures taken by the employer to protect an employee against any risk of being exposed;
iv. Importance of good housekeeping and personal hygiene requirements;
v. Precautions to be taken by an employee to protect him/herself against the health risks associated with the exposure;
vi. The correct use and maintenance personal protective equipment;
vii. The necessity of medical surveillance;
viii. Safe working procedures regarding the use, handling, labelling and storage of HBAs;
ix. Procedures to be followed in case of an emergency.
Great training promotes a safer working environment.

STAY CURRENT TO BE EFFECTIVE

Hey! I was trained in 1948 and was good enough for then, so it's good enough for now ... whipper-snapper!

The codger doth protest too much, methinks.
Medical surveillance

• Employer shall ensure that an employee is under medical surveillance if:
  i. The results of the risk assessment indicate that an employee may be exposed to HBA;
  ii. An identifiable disease or adverse effect to his or her health may be related to the exposure
  iii. An occupational health practitioner recommends that the relevant employee should be under medical surveillance and the employer may call on an occupational medical practitioner to ratify the appropriateness of such a recommendation

• The initial health evaluation should be carried out by an occupational health practitioner immediately before or within 14 days after a person commences employment. It should comprise of the following:
i. An evaluation of the employees medical and occupational history;

ii. A physical examination;

iii. Other appropriate medical tests or any other essential examination that in the opinion of the occupational health practitioner is desirable in order to enable the practitioner to do a proper evaluation.

• Periodic medical examination and tests in cases where HBA is known to be capable of causing persistent infections which-
  i. Can result in an illness which is recurrent in spite of treatment; and

ii. Are known to have serious long term effects.
Maintenance of equipment

- All protective equipment and engineering controls provided in order to control exposure to HBA shall be maintained in good working order.
Records

• An employer shall:
  i. Keep all records of risk assessment and monitoring results for a minimum period of 40 years.
  ii. Keep all records of medical surveillance for a minimum period of 40 years.
  iii. Keep a record of the examinations and tests carried out on engineering control measures and any repairs for at least 3 years.
Transportation, storage and disposal of HBAs

- HBAs in storage, in transit are properly contained and controlled to prevent the spread of contamination from the workplace.
- They shall be transported in the colour-coded containers and are clearly marked with a bio-hazard sign and other relevant warning signs that identify the contents.
- Written procedures enabling infectious waste to be handled and disposed of without risk shall be implemented.
• Ensure that all equipment including vehicles, re-usable containers which have been in contact with HBA waste are disinfected and decontaminated.

• All employees involved in the collection, transport and disposal of HBA waste are provided with suitable PPE.