

M507 – Health effects of hazardous substances – Revision questions

Section 3 – Types of health effects

1. What are the main types of asphyxiants? How do they affect the body?
(Page 11)
 - Simple asphyxiants – chemically inert, prevent normal respiration by displacing oxygen in an enclosed environment
 - Chemical asphyxiants – prevent the body using the oxygen present in the air. May prevent oxygen reaching the cell (e.g. carbon monoxide) or interfering with biochemical process (e.g. hydrogen cyanide)
2. What do you understand by the term ‘irritant’? Give examples
(Page 12)
 - Substance that can cause reversible irritation on contact with a body tissue such as skin or mucous membrane. In addition to the usual acute effects repeated exposure may lead to chronic effects such as bronchitis or dermatitis. (Examples see manual)
3. What do you understand by the term ‘narcotic’ effects? What are typical symptoms
(Page 13)
 - Narcotic substances depress normal function of central nervous system. Symptoms include fatigue, headaches, dizziness, euphoria, nausea, unconsciousness and death.
4. What do you understand by the term ‘carcinogen’? What are the two mechanisms by which cancer may be caused?
(Pages 14 and 15)
 - A carcinogen can cause cancer (a disorder of cells characterised by abnormal cell division and uncontrolled growth).
 - Genotoxic mechanism – substance damages genetic material in the cell
 - Non-genotoxic (irritant) mechanism – repeated damage to tissues causes an increased rate of cell repair and division. This increased rate of cell division increases chances of cell mutations.
5. What do you understand by the terms ‘benign’ and ‘malignant’ tumours?
(Pages 14 and 15)
 - Benign tumours – can grow large, but do not invade surrounding tissues or spread to other parts of the body. Can usually be removed surgically, usually not life threatening.
 - Malignant tumours – can spread throughout the body with development of secondary tumours, tend to be aggressive and difficult to treat surgically, usually life threatening.
6. What classification schemes are commonly used for carcinogens?
(Pages 17 and 18)

- International Agency for Research on Cancer (IARC)
- ACGIH scheme
- Globally Harmonised System of Classification of Labelling of Chemicals

7. What do you understand by the terms ‘sensitisation’?

(Pages 19 and 20)

- Body’s defence mechanisms react adversely to exposure to a substance. Effectively it treats it as an invading micro-organism.
- First exposure to an allergen produces specific IgE antibodies. In a sensitised person subsequent exposure may produce an adverse reaction with the release of large quantities of histamine.
- For the skin this causes inflammation (acute contact dermatitis).
- For the respiratory system this may cause narrowing and inflammation of the airways.