



## AIR POLLUTION

### SELF-ASSESSMENT TEST

#### LESSON 4

#### Answers

1. **True**

Emission factors assume a **linear relationship** between the intensity of an activity and the emission resulting from this activity. For example, grams of carbon dioxide released to the atmosphere per megawatt.

2. **True**

BREF reports are published periodically collecting the Best Available Techniques (BAT) for each industrial process. They are developed under the Integrated Pollution Prevention and Control (IPPC) Directive and the Industrial Emissions Directive (IED).

3. **False**

The fractional separation efficiency **increases** with increasing particle size. It depends on the type of equipment, design variations and operating conditions.

4. **True**

Cyclones are usually employed as **pre-cleaners** before the gases pass through final control devices such as electrostatic precipitators or baghouses. They are not effective at removing particle sizes down to **5  $\mu\text{m}$** .

5. **False**

For a **high-temperature** gas, an adequate pretreatment to remove **small** PM would be a bag filter made of **synthetic fibers such as nylon, orlon or polyester**. **Cotton** is very popular for **low-temperature** operations.

6. **True**



Electrostatic precipitators (ESP) are **not suitable for combustible particles**. Some other **disadvantages** of ESP are their initial costs and the large amount of space required for their installation.

**7. True**

Venturi washers are designed to effectively use the energy of the dirty gas stream to **atomize the scrubbing liquid**. They are capable of achieving the highest collection efficiency of any wet scrubbing systems.

**8. False**

Electrostatic precipitators' efficiency is **directly** related to the area of the collecting electrodes. Deutch-Anderson, among others, proposed an equation that relates the collection efficiency of ESP to various operation parameters such as drift velocity and the area of collection electrodes.

**9. False**

**Adsorption** requires materials with extremely large surface-to-volume ratios such as activated carbon or silica gel. It is a process in which certain gaseous pollutants are selectively removed from the gas stream because they adhere to the surface of a **solid**. In contrast, **absorption** refers to the transfer of gaseous pollutants from the gas stream into a **liquid**.

**10. True**

Biological systems are mainly used for removal of **organic compounds** (for example, VOC). They also remove **some inorganic compounds** such as ammonia and hydrogen sulphide.