



# Science In Action 9

## Unit 3

## Environmental Chemistry

### Section 1.0

#### Chemicals in the Environment can Support or Harm

- All things (living and non-living) are formed by chemicals
- **Pollution** – any change that is harmful to living things
- **Acids** and **Bases** occur naturally - measured by **pH**
- **An acid neutralizes a base, producing salt and water**
- Common elements needed by plants & animals – C, H and O
- **Organic** molecules contain carbon, **inorganic** molecules don't
- Plants use inorganic substances to produce organic molecules
- Optimum amounts of nutrients are need for good health
- Plants take in substances through their roots by **osmosis**, animals ingest food and absorb nutrients in their blood
- Environments and **substrates** affect the availability of nutrients

### Section 2.0

#### Environmental Monitoring of Chemicals

- **Water quality guidelines** protect living things
- Chemical concentrations are measured in **parts per million**
- **Biological indicators** (invertebrates) and **Chemical indicators** (dissolved oxygen, phosphorus, nitrogen) measure water quality
- **Air quality** measures (**SO<sub>2</sub>** and **NO<sub>2</sub>**) over time
- **Carbon dioxide** and **Ozone** are monitored globally

### Section 3.0

#### Harmful substances spread and are concentrated

- Chemicals are **dispersed, diluted** and **deposited** by air, soil & water - **groundwater** can help to chemically change substances
- **Concentration** changes by **dispersion, dilution, biodegradation, phytoremediation** and **photolysis**
- Hazardous material affect living things and the environment (oil spills)
- Using, storing, disposing and transporting Haz. Mat is regulated