Chemistry 20

Unit C: Solutions and acid-base chemistry

Solutions in society and the laboratory

Solutions in daily life

- Sports drinks, intravenous saline, and river samples are all solutions people measure on purpose.
- The number on each container is a concentration chosen for that use.

Three communities, three unit habits

- Laboratories use mol·L^{-1}, households use percent, and environmental studies often use ppm or mg/L.
- Responsible Care members commit to safe handling and to reports the public can read.

Key terms

biomagnification

The rise in concentration of a stored substance along a food chain, so predators hold more than the water did. (methylmercury)

Responsible Care

The Chemistry Industry Association of Canada program, begun under the Canadian Chemical Producers' Association, in which member companies commit to safe handling and public reporting. (public reports)

stewardship

A commitment to meet a human need while keeping the environment able to recover, shown here by a smaller release and a downstream check. (effluent plan)

effluent

Wastewater released from a process into a waterway. (plant outflow)

Key terms

WHMIS

The Workplace Hazardous Materials Information System, which uses labels and pictograms to communicate hazards before a product is handled. (pictogram)

Stored substances climb the food chain

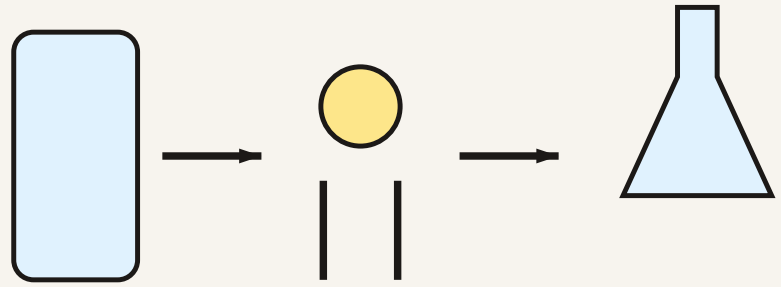
- Biomagnification turns a tiny concentration in water into a much larger concentration in predators.
- A risk-benefit judgment depends on the concentration and on who is exposed.



A procedure that starts with the label

- Read the WHMIS pictograms and the consumer label, then test conductivity and measure a solid solute.
- Use a balance and a volumetric flask, and compare the calculated concentration with another group.

Label, then the measurement



Bottle label Test probes Volume flask

Compare your result with a partner.

Reducing a release

- Two groups who aimed at the same target compare their calculated concentrations on one graph.
- A stewardship plan names a smaller effluent release and a downstream concentration check.

Unit and commitment

- Match a lab stock, a household cleaner, and a river metal to mol·L^{-1}, percent, and ppm or mg/L.
- State the smaller release and the downstream check in one stewardship plan.

Image credits

Sumeet Moghe, Osprey in flight with a fish kill, CC BY-SA 4.0