Environmental Toxicology: the context

- "The study of the action of chemicals upon environmental systems (ecosystems)"
- One component of environmental studies
- Other components include
  - Conservation of species
  - Habitats and ecosystems
  - Protection of endangered species
  - Various levels of management for water, soil, wildlife and fisheries

Graphical representation of LC50

Typically we plot the dose on the x-axis, in linear or logarithmic form, and the response on the y-axis.
Limitations of the LC50

Concerning the choice of organism for a test

The concept of Threshold

Is there a “no effect level”
Or do we rather decide upon a “no observable effect level”?
NOEL

The zero tolerance and zero discharge concepts

More terms to define

✓ Persistence (non-degradability)
✓ Bioaccumulation
✓ Bioconcentration
✓ Biomagnification
Carcinogens/carcinogenicity

Substances that produce cancer. Carcinogenicity can be viewed as a sub-set of toxicity. The manifestations are generally considered as the most serious type of effect. Typically a long time lag between exposure and response. Special approaches and tests, see chapter 2 sections 2.3.1

Beyond the laboratory: Biological indicators and biological monitors

An approach that is unique to environmental toxicology – organisms respond to some specific change in the environment in which they live: e.g., lichen deserts.

A biological monitoring system for atmospheric pollutants, using moss

The gull egg monitoring system for organic contaminants in the Great Lakes

Ecological modelling

Simulation of the behaviour or a contaminant by mathematical modelling; mass balance modelling is one of the major approaches.

Mass balance modelling
Other Approaches

Microcosms, Mesocosms, larger enclosures, large scale manipulations.