

PROBLEM

Although many detergents are now what is called “biodegradable”, degradation takes a finite time, and detergents which by one means or another find their way into rivers, lakes, swamps etc. could be quite harmful before they are degraded. In particular, detergents affect the permeability of biological membranes. You could investigate the tolerance of certain freshwater organisms to various concentrations of detergents.

INFORMATION

1. Organisms easily available in sufficient numbers for testing include :

Mosquito larvae, small arthropods such as *Daphnia*, freshwater snails, fish, the plant *Lemna*, tadpoles

As you will be killing animals you may find it less upsetting to knock off invertebrates rather than vertebrates. Problems to remember are that it is very difficult to measure when a plant is “dead” compared to an animal, and that some animals like mosquito larvae go through developmental stages during the experiment.

2. There are various types of household detergent, some of which are coloured, scented.
3. The aim of properly designed experiments on the tolerance of animals for lethal conditions is to determine the level of a lethal factor that can be tolerated by a given percentage of the animals for a given period of time. Another way of tackling it is to measure the length of time a given percentage of the animals can tolerate a given level of a lethal factor.
4. Individuals of a species will differ in tolerance.

DESIGN OF EXPERIMENT

1. Will you maintain the organisms in the laboratory for testing, or collect from the “wild” each time?
2. Which animals and/or plants will you test?
3. How will you measure tolerance limits and survival times?
4. How many individuals of a species will you test?
5. How many detergents will you use and at what concentrations?
6. Will you use pond water or tap water as your basal solution?
7. What will be the control in each experiment?
8. How will you be sure that the organisms are dying from the detergent and not some other factor like lack of oxygen.

REFERENCES

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