

Aquatic environmental toxicology

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Aquatic environmental toxicology Cost-effective estimation of bioaccumulation potential There are various methods of determining the bioaccumulation potential including, laboratory test, field monitoring and use of models. Among the three methods, the most easily and least expensive is the laboratory test. This method is simple in such a way that the organisms are placed in vessels that contain sediments and superimposing water, and then they are allowed to accrue contaminants from the sediments for a specific period of time. Chemical analysis is usually done on the sediments to establish a chemical data that will be used to compare the toxicity of the result with any other result.

It can be said that the method is effective as control of the environmental condition is made possible. Laboratory methods provide more sense of flexibility in terms of timing and it reduces workload and cost as well as seasonal and spatial variability (U. S. EPA 2000a). The use of laboratory test can enable one to formulate research question such as kinetics of acceptance and eradication, growth of the species or reproduction. This technique is also efficient as it is not subjected to assumptions like use of models.

The approximate cost of this method is about \$600; this is because of the tools that are required to perform this task. It is less expensive as it only requires a one day activity to gather the sediments and organisms. After collection of the samples for analysis the other part of activity is a one person activity. It is also possible to acquire some of the equipment below locally or improvising some such as dredgers or using your cell phone for GPS purposes, making the method cheaper.

Simple budget of equipment needed

Equipment needed

Cost in \$

Boat, warden

\$600

Dredger

\$25

5 gallon buckets

\$10

Marker

\$10

Compass

\$5

Field sheet

\$15

Total

\$665

Clean water ACT

The clean water act has helped US navigable water to be protected from pollution by regulating the rate, amount and type of discharge of pollutants in the water bodies including the stream, rivers, coasts, wetlands and rivers. The act has significantly reduce the level of pollution from industrial and municipal

For waters meant for swimming and fishing, the act was set to eliminate the disposal of untreated waste products with contaminated effluents from

industrial and municipal plants. It required operators of such industries and businesses to apply for a permit to authorize their discharge into water bodies with a promise to reduce the discharge significantly over time.

In 1998, the act was able to achieve 60 percentage of American clean waters thus they redirected their focus into eradicating nonpoint source water contaminants including agricultural runoff within chemicals or erosion of contaminated surfaces such as construction sites using different types of chemicals.

Estimating integrity of water

The integrity of the water can be estimated by performing Biological Monitoring of water bodies. This involves assessing the relationship between human activities such as pollution and their impacts on a certain aquatic life. The biological method is mostly effective than the chemistry way because of the many variety of pollution in the water bodies ranging from agricultural, biological, sedimentation, industrial and domestic.

Biological monitoring uses the aquatic life to detect the level of impairment of the water by examining the changes in a particular aquatic life. Since the aquatic life bio accumulates the toxins in the water, researchers use various measures of such communities to make an Index of Biological Integrity (IBI), which distinguishes the natural behavior of aquatic life against that of a disturbed environment.

Work cited

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