

GEOGRAPHY

6TH SEMESTER (HONOURS)

PAPER: DSC 4 (E) (ENVIRONMENTAL MONITORING) UNIT: 4.2

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ENVIRONMENTAL MONITORING

- ❖ Environmental monitoring involves the assessment of the quality of the environment in order to control the risk of pollution. It is base of environmental impact assessments. This information is used to study environmental trends and to quantify the current state of environment.
- **Objectives:** The objectives of Environmental monitoring are-
 - 1) To provide a data base from which the environmental impacts of the projects can be assessed.
 - 2) To monitor the performance of the project and effectiveness of the mitigation measure.
 - 3) To take remedial actions if unexpected problems or unacceptable impact arise.
 - 4) To determine project compliance with regulatory requirements, standards and government policies.
 - 5) To provide an early indication should any of environmental project fail to achieve the acceptable standards.
- **Scope of Environmental monitoring program:**
 - 1) To identify and resolve environmental issues and other functions that may rise during the implementation and operational issues.
 - 2) To check and quantify overall environmental performance, implement action plans and recommended and implement remedial actions.
 - 3) To manage and liaise with stakeholders, local authorities regarding any environmental issue during implementation phase.
- **Types of Environmental monitoring:**
 - 1) Sources of monitoring (identification and characterization of main sources of pollution in urban areas).
 - 2) Ambient environmental monitoring (air pollution, water pollution, sediment, soil, biological monitoring, noise level monitoring)

BIOLOGICAL MONITORING

- ❖ Biological monitoring is the continued examination of biological specimens taken from a specific environment to identify any human caused issues, to determine the effects on their respective habitats. Example- Tissue samples are analyzed to determine the effects of the chemicals on specific species.
- ❖ **Bio-indicator:** Bio indicator refers biological process, species, or communities which are used to assess the quality of environment and how changes over the time.

- **Types of bio indicator:** 1) Microbes indicator (Maritime organism)
 - 2) Animal indicator (zooplanktons)
 - 3) Plant indicator (lichens)

- **Criteria to be a bio indicator-**
 - 1) *Good indicator ability-* Bio indicator must give measureable response to the disturbance about the whole community or the ecosystem and this indicator should have ability to measure degree of degradation.
 - 2) *Abundance and common-*The bio indicator must have adequate number (rare species are not optimal) within study area.
 - 3) *Well studied-* The bio indicators must be familiar to the experts that means ecology and life history well understood and must be easy and cheap to examine.
 - 4) *Economic and commercially important-* Species already being harvested to other purposes and public have interest about the species.

- **Advantages of Bio indicator:**
 - 1) Bio indicator add a temporal component corresponding to the life span or residence time of an organism in a particular system, allowing the integration of current , past, future environmental conditions.
 - 2) Bio indicators have ability to indicate indirect bio effects of pollutants when many physical or chemical measurements cannot.
 - 3) Among the thousands of substances and factors to monitor scientist now realize that biota itself is the best predictor of how ecosystem respond to disturbance or the presence of stressor.

- **Disadvantages of Bio indicator:**
 - 1) Bio indicators are scale dependent that means a large vertebrate (fish) may fail to indicate the bio diversity of local insect communities.
 - 2) Bio indicator species invariably have different habitat requirements than other species in their ecosystem. Managing an ecosystem to the habitat requirements of a particular bio indicator may fail to protect rare species with different requirements.

References:

- 1) “Environmental monitoring.” Safeopedia.com.
- 2) “EIA for the setting up of a Dye house at LA tour koeniy, chapter: 7 Environmental monitoring plan.”
- 3) “Biological monitoring.” Petrowiki.org.
- 4) “Bio indicators: using organism to measure environmental impacts.” Nature.com.
- 5) Holt, E.A & Miller, S.w. (2010) ‘Bio indicator: using organism to measure environmental impacts.’ Nature education knowledge. 3(10), 8.
- 6) Somvanshi, S. “Environmental monitoring.” Slideshare.net.

