1.3.2 DVV Clarification

Reply

Project report of the following is enclosed herewith

S. no	Project title	Name of the students	Page No
1.	Project report on Tourist Guide at Chotte Shah Shrine	1.Umar Ishaq, 2. Zohib Khan, 3. Waqar Ahmed	02-07
2.	A report on impact of developmental projects on environment using Environmental Impact Assesment (EIA) method	Zohib Khan	08-33
3.		Mohd Ibrahim khan,	34-44
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DEPARTMENT OF GEOGRAPHY

GOVT GSM MEMORIAL, DEGREE COLLEGE MENDHAR

SKILL COURSE:- TOURIST GUIDE (USEGOT-104)

DEPARTMENT OF GEOGRAPHY ORGANISED A TOUR TO VISIT CHHOTEY SHAH SHRINE

GROUP 10	
ROLL NO:-	NAME
389	Mohian Khan
118	Zohib Khan
176	Umar Ishfaq
333	Waqar Ahmad
390	
474	
487	

TOURIST SPOT :- *CHOTAY SHAH (zairat)*

PILGRIMAGE

ABOUT CHOTAY SHAH (HISTORY)

It is said that about 350 years back a Sayed family resided in a hamlet SaagiDaab of the village Chajlla. The head of this family was a religious and spiritual personality who always remained busy in meditation. He possessed only a small piece of land holding, and a Kacha house. He had no other source of income except the production of Maize from his landholding and he was not in the position to purchase cattle to supplement his income, because the head of the family was not taking interest in domestic matters due to which the economic condition of the family was very weak. This religious personality had two sons namely Sayed NazirHussaian Shah, Sayed Masoom Shah and a daughter. Sayed NazirHussaian Shah was also inclined towards spiritual deeds and meditation from his childhood and had become popular among the natives as PirChotay Shah because the people had benefitted due to his blessings.

During childhood when the friends and young relatives of PirChotay Shah were grazing cattle in the pastures and riding buffalos to amuse themselves, PirChotay Shah, his brother and sister were only watching them because they were not having cattle to graze and ride.

One day when the other children were grazing the cattle PirChotay Shah, his sister and brother plucked wild Annars from nearby forest and started playing with them presuming that these wild fruits are their cattle.

When the buffalos of other children took bath in SaagiDaab (pond) and some children enjoyed by sitting on the back of buffalos, PirChotay Shah prayed for spiritual power for conversion of wild annars into cattle so that they could also give bath to their Buffalos and ride on them. Therefore they threw their wild fruit in the pond and within twinkling of eyes these wild fruits were converted into Buffalos who also started swimming on the surface of the pond like the buffalos of other children. PirChtay Shah, his brother and sister were astonished to see this miracle. The other people and children standing near the pond were stunned this. They rushed towards the house of PirChotay Shah and told his father about this happening. The father turned furious on children for revealing the spiritual power. Therefore the angry father moved towards pond, reached near the pond and saw that his two sons and daughter riding on the back of the buffalos. He tried to beat them by saying that he was passing his days in meditation and prayers but now they had disclosed the spiritual power before the public and people would disturb him and hinder meditation.

Due to the anger of father PirChatay Shah and his sister ran away towards present ZiariatShrif area while PirMasoom Shah ran towards his house in the village Chajlla. Seeing father chasing them, PirChotay Shah and his sister reached at present ZiaratSharief they prayed to God for shelter because they were not in a position to face their father. It is said that at that very time a part of earth was broken in the shape of grave and PirChotay Shah and his sister buried themselves in the grave. Then the father realized the spiritual power of PirChotay Shah. Therefore he constructed a small shed at that place in memory of his son PirChotay Shah and daughter. With the passage of time this place took the shape of a shrine and turned into a center of religious tourism. The SakhiMaidan village where the Shrine of PirChotay Shah is located is also known for the Bathak of PirSakhi Sarver who had come from Multan and stayed at this place for preaching of Islamic thoughts. On his name the village is known as SakhiMaidan. The Bathak of PirSakhiSarvar near the shrine of PirChotay Shah is also famous in Mander valley.

Every year on 13th day of moon in the month of July a Mela is organized near the Bathak in memory of PirSakhi Sarver. In this Melaapart from religious ceremony local games like Dungal, Beeni and Kabadhi were organized in the past. This Mela was a symbol of composite culture in which Muslims Hindu and Sikhs were jointly participating. However after militancy, the old glory of this Mela vanished. Now only religious flag is hoisted, a goat is saerifieed and Khatam Sharif is organized by the local devotees on this day.

Near the Shrine of PirChotay Shah and PirSakhi Server, the ruins of PandavMehal exist. The natives believe that this monument was constructed by the Pandvas during exile period. The Panday complex was also supported with a proper water channel which was brought from the village Kalaban area. Historically, it is said that this monument was constructed by a Greek king Manindra of Punjab who had a religious discourse with a Buddhist monk and embraced Buddhism at this place. On the name of King Manindra, the whole valley came to be known as Manindra and with the passage of time the name Manindra changed to Mendhar. It is possible that originally there was a PandavasMehal which latter on might have been converted in to a Buddhist monument after the discussion of King Manindra and Buddhist monk. Renowned writer KrishanChander passed his childhood in Mendhar where his father Goori Shanker was posted as doctor in Mendhar hospital. He wrote in his book 'MittiKeSanam' that some important idols of Pandvas time and a Bawli was recovered by a Muslim cultivator near the Bathak of PirSakhi Sarver in this village. The Hindu population of the area lateron started visiting this place and converted it into a religious spot .

- **Mendhar** is a tehsil (administrative district) in the Poonch district of the Indian union territory of Jammu and Kashmir. It is located in the foothills of PirPanjal range within the Himalayas. The Mendhar Tehsilheadquarters is in Mendhar town. It is located 60 km (37 mi) south of the Poonch district headquarters and 210 km (130 mi) from the state winter capital Jammu.

HERE IS AN MAP OF MENDHAR (INDIA)

(LOCATION MAP AND ROAD MAP)

The highest summer temperature is in between 19–35 °C (66–95 °F).

The average temperature in January is 9 °C (48 °F); February is 13 °C (55 °F); March is 19 °C (66 °F); April is 24 °C (75 °F); and May is 30 °C (86 °F).

The tehsil is well-connected to other places in Jammu and Kashmir and India by the NH 144A

HOW TO REACH CHOTAY SHAH FROM MENDHAR

- **When you reach Mendharthen search here local transport from Mendhar to Chotay shah shrine .**
- **If you have personal transport then follow this map to reach Chotay shah shrine .**

THIS IS THE ROAD MAP OF MENDHAR TO CHOTYA SHAH

ABOUT CHOTAY SHAH SHRINE MANAGEMENT SYSTEM

- **In the begning themanagement system is undertehsildarMankote*MOHD YOUNIS MIRZA.*And after In 1979 Aquaf trust had taken over this Dargha and started systematic development.**
- **Presently, the shrine complex is spread over five Kanal land and comprises of DargaShrif, Madarsa building, office building, Masjid Sharif, administrative wing, Langer Khana and MehmanKhana. Tourism department is also planning to construct a guest house for the convenience of tourists.**

SCS Government Degree College Mendhar, Poonch

Department of Environmental Sciences

Project Report

Impact of developmental projects on environment using environmental impact assessment method (EIA)

By

Zohib Khan

Parentage: Zakir Hussain

Roll No.: 118

Semester: 1st

Course Title: Environment Science and Education (UVAEVT102)

DATE: / /

Q.NO1:- General Process, History, silent features, importance of EIA (Environmental Impact Assessment).

Ans:- **Introduction**

→ Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account their-related socio economic, cultural and human-health impacts, both beneficial and adverse.

→ UNEP defines EIA as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and options to decision-makers.

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→ EIA in India is statutorily backed by the Environment Protection Act, 1986, which contains various Provisions on EIA methodology and Process.

→ History of EIA in India

→ The Indian experience with EIA began over 20 years back. It started in 1976-77 when the Planning commision asked the Department of science and Technology to examine the river-valley Projects from an environmental angle.

→ Till 1994, environmental clearance from the central Government was an administrative decision and lacked legislative support.

→ On 27 January 1994, the then union ministry of Environment

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and Forests, under the Environmental (Protection) Act 1986, Promulgated an EIA notification making Environmental clearance (EC) mandatory for expansion or modernisation of any activity of new Projects listed in schedule 1 of the notification.

→ The Ministry of Environment, Forests and climate change (MoEFCC) notified new EIA legislation in september 2006.

→ **The EIA Process**

EIA involves the steps mentioned below.

(1) **Screening** :- The Project Plan is screened for scale of investment, location and type of development and if the Project needs to statutory clearance.

(2) **Scoping** :- The Project's Potential impacts, zone of impacts, the mitigation Possibilities and

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need for monitoring.

(3) Collection of baseline data :- Baseline data is the environmental status of study area.

(4) Impact Prediction :- Positive and negative, reversible and irreversible and temporary and Permanent impacts need to be Predicted which Presupposes a good understanding of the Project by the assessment agency.

(5) Mitigation measures and EIA report :- The EIA report should include the actions and steps for Preventing, minimizing or by Passing the impacts or else the level of Compensation for Probable environmental damages or dose.

(6) Public hearing :- On completion of the EIA report, Public and environmental groups living close to Project site may be informed and consulted.

(7) Decision making :- Impact Assessment Authority along with the experts consult the Project-in-charge along with Consultant to take the final decisions, keeping in mind EIA and EMP.

(8) Monitoring and implementation :- The various phases of implementation of the Project are monitered.

(9) Risk assessment :- Inventory analysis and hazard Probability and index also form part of EIA Procedures.

Sident Features of EIA notification of 2006 Amendments

EIA notification of 2006 has decentralized the environmental clearance Projects by categorizing the developmental Projects in two categories, i.e.,
Category A (national level appraisal) & Category B (state level appraisal).

Category A Projects are appraised at national level by Impact Assessment Agency (IAA) and the Expert Appraisal Committee (EAC) and category B Projects are appraised at state level.

state level Environment Impact Assessment Authority (SEIAA) and state level expert APPraisal Committee (SEAC) are constituted to Provide clearance to the category B Proces.

After 2006 Amendment the EIA cycle comprises of four stages:
Screening.
Scoping.
Public hearing
Appraisal.

Category A Projects require mandatory environmental clearance and thus they do not undergo the screening Process.

Category B Projects undergoes screening Process and they are classified into two types.

1) Category B1 Projects (mandatorily requires EIA).
2) Category B2 Projects (Do not require EIA).

Thus, category A Projects and category B1 Projects undergo the complete EIA Process whereas Category B2 Projects are excluded from Complete EIA Process.

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Importance of EIA

EIA links environment with development for environmentally safe and sustainable development.
EIA Provides a cost effective method to eliminate or the minimize the adverse impact of developmental Projects.
EIA enables the decision makers to analyse the effect of developmental activities on the environment well before the developmental Project is implemented.
EIA encourages the adaptation of mitigation strategies in the developmental Plan.
EIA makes sure that the developmental plan is environmentally sound and within the limits of the capacity of assimilation and regeneration of the ecosystem.

→ Shortcomings of EIA Process

→ Applicability :- These are several Projects with significant environmental impacts that are exempted from the notification either becomes they are not listed in schedule I, or their investments are less than what is provided for in the notification.

→ Composition of expert committees and standards :-

It has been found that the team formed for conducting EIA studies is lacking the expertise in various fields such as environmentalists, wild life experts, Anthropologists and social scientists.

→ Public hearing :

→ Public comments are not considered at an early stage, which often leads do conflict at a latter stages of Project clearance.

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→ A number of Projects with significant environmental and social impacts have been excluded from the mandatory Public hearing Process.

→

→ The data collectors do not pay respect to the indigenous knowledge.

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Q No2:- EIA methodologies: matrix method; strengths, criticisms, examples.

Ans:- The Leopold matrix is a qualitative (EIA) method developed in 1971 by Luna Leopold and collaborators for the USGS. It is used to identify and assign numerical weightings to potential environmental impacts of proposed projects on the environment. It came as a response to the National Environmental Policy Act of 1969, which was criticized for lacking adequate guidance for government agencies on how to properly predict potential environmental impacts and consequently prepare impact reports.

The system consists of a grid of 100 rows representing the possible project activities on the horizontal axes and 88 columns representing environmental

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factors on the vertical axes, for a total of 8800 possible interactions. In practice, only a select few (25-50) of these interactions are likely to be of sufficient importance to be thoroughly considered. where an impact is expected, the appropriate cell of matrix is split diagonally from the top right corner to the bottom left corner in order for the magnitude and importance of each interaction to be recorded. The magnitude is inserted on the top-left diagonal and the importance is inserted on the bottom-right diagonal. measurements of magnitude and importance tend to be related, but do not necessarily directly correlates. magnitude can be measured more tangibly in terms

of how much area is affected by the development or how severely, however, the importance is a more subjective measurement. While a proposed development may have a large impact in terms of magnitude; the effects it causes may not actually significantly affect the environment as a whole. The example given by Luna Leopold is a stream that significantly alters the erosion patterns in a specific area, which may be scored highly in terms of magnitude but may not be necessarily significant, provided the stream in question is swift-moving and transports large amounts of sediment regardless. In this case, an impact of significant magnitude may not actually be important to the environment in the question.

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→ Strengths

→ As outlined by the original authors, the matrix Provides a structured framework for Practitioners of environmental impact assessment to systematically rank Potential significant environmental cause - and - effect relationships.

→ A structured approach avoids the downsides of less organized ad hoc approaches to impact Prediction in which impacts can be either underestimated or completely overlooked.

→ Additionally, the grid format allows for a visual display of results that can be easily understood by Policymakers and the Public.

→ The matrix is also capable of expanding and contracting based on the scope and environmental context of any given undertaking.

rendering it functional for both large and small-scale Projects.

→ Finally, it is beneficial to Practitioners that the tool can be applied at various temporal stages of the environmental impact assessment Process.

→ Criticisms

→ one of the fundamental downfalls of the method is the lack of criteria or standard methods for assigning magnitude and significance values which may lead to subjective judgements.

→ In the same vien the method has also been identified as lacking the ability to facilitate any degree of Public involvement, Primarily due to the subjective value judgements of the user.

→ Another Potential Paitfall is the sheer size of the matrix with total of 17600 items

of information potentially being analyzed.

→ The size of the matrix has also been criticized as being too detailed for some projects while simultaneously being too imprecise for others.

→ In terms of direct content, the chance of double-counting certain impacts is also present.

→ The matrix has further been identified as being highly baised toward biophysical impacts making the social impact of given Project difficult to access.

→ Another area that method can be used in having a mechanism capable of distinguishing between long-term impacts and short-term impacts.

→ Due to the presentation of completed matrices, the method has also been identified as

treating interactions as though they are certain to occur, with no consideration of Probability.

→ Examples of matrix implementation

(1) Gonabad landfill; a study conducted to evaluate the environmental effects of a multipal waste landfill site.

(2) Vojvodina ecological network; an assessment of the influences of anthropogenic factors on an ecological network (salt steppes, marshes, etc.).

(3) Karbala water Projects; a study on seven dinking water treatment facilities based on physio-chemical Properties.

(4) Binh Thuan desertification; an assessment of the Potential desertification effects impacts on socio-economic conditions.

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Q.NO3:- EIA methodologies; Network method, Advantages, Disadvantages, Checklist.

Ans:- The third common method of assessing impacts in EIA is called the Network method. This was first given by Sorenson in 1971, Primarily to explain linkages between different environmental aspects. It is solely used to illustrate and understand primary, secondary and tertiary impacts of a developmental activity.

→ How it is done?

Networks are usually in the form of flow charts or radiation diagrams, A developmental activity is identified after which, all Potential Primary impacts are written down. From

these ... Primary ... impacts, secondary and tertiary impacts are identified and connected onto the network.

→ Advantages

→ Networks help us follow the chain of events of a developmental Projects, and its associated impacts.

→ It can assess multiple impacts at same time, helping us identify links that can easily be overlooked in the checklist forms of impact assessments.

→ It can be aesthetically pleasing. Pleasing and easy to follow if done in a proper way. often, networks are called "impact trees".

→ Disadvantages

→ However, networks do have considerable disadvantages.

→ Unlike matrices, networks give no information at all about the magnitude and the significance of impacts.

→ Further, no matter how hard you try, the networks can get very long and messy.

→ This is especially the case if the Project being assessed is a large scale Project.

→ In order to identify all levels of impacts, considerable knowledge of the environmental conditions of the Project area is required.

→ This Puts impetus on the extent of detail in the baseline study.

→ Id is only Preffered over other methods when multiple levels of impacts are expected at every stage of the development.

→ Checklist, network?

Each form of impact assessment has advantages and disadvantages. Each form Provides unique information that can be very beneficial in understand component interactions as well as activity Component interactions.

some considerations for the selection of impact assessement method are;

→ The scale of the Project:- Generally, small scale Projects go for checklists as it is comprehensive for that Purpose. medium scale Projects can use either matrics or networks, depending on the

Potential impacts of the Project activities. Large scale Projects are better off using matrices.

→ Extent of detail required:- Checklists tend to be more ~~ex~~ descriptive, whereas networks are quite simple in appearance. matrices have the ability to be both descriptive or simple; depending upon the type of matrix used.

→ Time available for Project:- Sometimes, the EIA team is hard-Pressed for time and cannot spend too much time figuring out all the implications of the activities. They try to go for the most significant impacts and the description of these impacts.

→ Budget involved:- This will again, Checklist determine the amount of detail that can

be generated from the baseline study. Budget has an indirect influence on the method of analysis used.

→ However, there is no hard and fast rule saying only one method of impact analysis need to be used.

→ From what you have read in the last three blogs on impact assesment, you will appreciate that mixture of matrices and networkes will give you both, magnitude and significance of impacts, as well as the secondary and tertiary levels of impact.

→ The team, if it considers it a good idea, can certainly go for both forms of impact assessment in order to get the most accurate information about the Project area.

→ At the end of the day, the sole purpose of impact assessment is to identify all the impacts.

→ Then identify the important / significant impacts that arise through both direct and indirect relationship between activities and aspects.

→ This will help us move forward to the next step of the EIA Process - Prediction and mitigation.

Q.NO4:- Environmental Impact statement (EIA). Law, Applications, source and contents.

Ans:- EIs is a government document that outlines the impact of a proposed project on its surrounding environment.

→ In the united states, these statements are mandated by federal law of certain projects.

→ ~~EIr~~ EIS are meant to inform the work and decisions of policy makers and community leaders.

→ Here, Teaching legal Docs will explore the EIS - what is it, who writes them and why, what parts are information are typically included, and why they are significant resources for teaching about environmental and environmental policy in classroom

SCS Government Degree College Mendhar, Poonch

Department of Environmental Sciences

Project Report

On

Impact of developmental projects on environment using environmental impact assessment method (EIA)

By

Mohd Ibrahim Khan

Parentage: Mohd Khalil Khan

Roll No.: 188

Semester: 1st

Course Title: Environment Science and Education (UVAEVT102)

H.O.D. EVS
Govt. Degree College
Mendhar

DATE: / /

Q.1: What is EIA.? Write a note on various steps.?

Ans:- The principal aim of an environmental impact Assessment (EIA) is to give the environment its due to place in the decesion making process by clearly evaluating the environment consealuences of a proposed activity before action is taken. The concept has ramifications in the long run for almost all development activity because sustainable development depends on protecting the natural resources which is the foundation for further development".

Screening: to determine which projects or developments

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Require a full or Partial Impact assessment study.

Scoping: to identify which Potential Impacts are relavant to assess (based legislative requirements, International Conventions, expert knowledge and Public involvments) to identify alternative solutions that avoid mitigate or compensate adverse Impacts on biodiversity including the optional of not proceeding with the development finding the alternative designs or sites which provide the Impacts incorporating safe-guard in the design of the project. or providing compensions for adverse effect impacts)

and finally to derive terms of references for the impact assessment.

Reporting: The Environment Impact Statement (EIS) or EIA report include an environment management plan (EMP) and a non-technical for the general audience.

Review: of the environment impact statement (EIS) based on the terms of reference (Scooping) and public include) authority participation)

Decesion making: on weather to approve the project or not and under what conditions.

monitoring: compliance, enforcement and environment audience monitor weathers the predicted impact and imposed mitigation.

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measure occurs as defined in the EmP).

Q2: Difference between Screening and Scoping:?

1. Screening: is the process of dealing on Weather an (IEA) is required determined by size (e.g) greater than that size) that a (Pre-determined) surface area of irrigated land that would be affected more than a certain perchange or flow that to be diverted or more than that certain capital expenditure. alternatively it may be based on site specific information for while a whilst a major new head work structure may.

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The consequences of the screening decision may be far-reaching and therefore a important a correct decision on the significance of a development effect is important.

Scoping: occurs early in the project at the same time as outline of planning studies. Scoping is the process of identifying the key environmental issue and is most important step and (EIA). Several groups particularly decision makers, the local population and the scientific, community have an interest in helping to deliberate the issue which should be considered.

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Scooping is important for two reason:

1) First so that Problems can be pinpointed early allowing mitigating design changes to be made before expensive detailed work is carried out.

2) Second to ensure that detailed prediction work is only carried out for important issues. It is not the purpose of an (EIA) to carry out exhaustible studies on all environment impact for all project. If key issue are identified and a full scale EIA considered necessary then the Scooping should include the terms of reference for

these further studies.

Q.NO3: Adhoc method and Checklist method.

Adhoc method: Ad hoc method indicates the broad areas of possible impact by listing composite environmental Parameters.

Advantage of Adhoc method:

1. All possible no of environment components are listed.
2. It is very simple and easy understand.
3. It compare the realisements of alternative.

Disadvantage of Adhoc method:-

1. It may not compass the relvant

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gmpacts.
The criteria used to evaluate gmpacts are not comparable the relative weights of various gmpact cannot be compared.
5) not good in organizing and presenting data.

Checklist method: are standard list of all types of gmpact associated with a particular type of projects. All checklist have boxes or cells that must be filled with gnformation about the nature of the gmpact.
Advantage of checklist method:
easy to understand and use.
good for site and priority setting.

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simple for ranking and weighting.

Checklist method of disadvantage:

do not distinguish between direct and indirect impacts.
do not link action and impact.
the process of incorporating value can be controversial.

Limitation of EIA:

- EIA is also a way of ensuring that environment factors are considered in decesion making process along with the traditional economic and technical factors.

importantly EIA reallwies the Scientific (technical value issue to be dealt with a single assesment process. This help in the proper consideration of all advantage and disadvantage of aproposal. environment considerationsmay therefore be set aside in favour of what are felt to be more important considerations. Alternate perdicated adverse effect on a remedy or Adverse effect or Perhaps lead to be complete abandonment of a prosal. however it is more important to recognise that (EIA) can be regarded as a means of introducing an environment veto power. by an veto power of [EIA]

SCS Government Degree College Mendhar, Poonch
Department of Environmental Sciences

Project Report

On Topic

Impact of developmental projects on environment using environmental impact assessment method (EIA)

Waqar Ahmad

Parentage: Mohd Latief

Roll No.: 333

Semester: 1st

Course Title: Environment Science and Education (UVAEVT102)

Q.No1. EIA Concept and Historical Background.

EIA is a process of evaluating the impact of any proposed activity on environment taking into account all the associated impact like socio-economic cultural and human health impact.

It is a tool used to describe the environmental social and economic impacts of a project prior to decision making. It aims to predict environmental impact of a stage in Projection Planning and design. Shape project to suit the local environmental and present the predictions and options to decision makers (UNEP)

Objection:

(1) Find ways and means to reduce adverse impacts.
(2) Predict the environmental impact of projects.
(3) Shape the projects to suit local environment.

Benefits of EIA

(1) Improved project design/ Making.
(2) More environmentally sensitive decision.
(3) Increased accountability and transparency during the development process.
(4) Improved integration of project into their environmental and social setting.

EIA is a process which ensure that all environmental matters are taken into account quite early in the project at planning process itself. It take into account not only technical and economic consideration but also traditional aspect like impact on local people biodiversity etc.

The EIA directive require project likely to have significant effects on the environment by virtue of their nature, size or location to undergo an environment assessment before the competent authority in question grants consent.

Impact type of EIA.

The impact associated with a developmental activity can be various types like short term or long term, repairable or irreparable positive or negative, temporary or long lasting, reversible direct or indirect.

1) Direct impact: These impact include addition of any proposed activity by products into the environment. For instance: direct release of effluents gases from thermal power plant the atmosphere may degrade the quality of air discharge of EIP material of the water may increased.

Indirect: These are also known as secondary impact. result from a complex pathways.

- Cumulative impact: when present past and future other project in the act vicinity and proposed project have similar impact the resulting impact are taken as cumulative effect.

- local impact: As impact can be site specific or limited to the project area a locally occurring impact within the locality of the proposed project.

Global impact : A regional impact may sometime extend beyond national level & become transboundary dispersal problems.

Reversible impact : These involve impact that can be reversed and can be mitigated if taken care of for instance increased acidity of soil can be treated by increasing basicity of soil increased SPM Concentration in air.

Q no3. AD Hoc & checklist Method.

Ans:- Adhoc Method indicate broad area of possible impact by listing Composite environmental parameters. likely to be affected by the proposed activity or any development.

Adhoc Method are not really method as they do not structure the problems so it more amenable to systematic analysis. A good eg is on their area.

⇒ This Method is very simple and can be perform without any training.

Checklist Method: are Comprehensive list of environmental parameters which are related to a particular action.

This is very popular Method in EIA. Studies. checklist method are primarily used for organizing information or ensuring that no potential impact is overlooked.

They more formalized version of adhoc approach on this method specific area of impact are listed and instruction are supplied for impact identification & evaluation.

04. Environmental management Plan:

Ans: Environmental Management plan to warrant that indicate the industrial development in an identification particular, study area need to be endangered with judicious utilization of non-renewable resource and to ensure that they the stress on the ecosystem is within its permissible Assimilative capacity.

Environmental attributes of is governed by dilution, dispersion and removal due to physico-chemical and biological process.

Environmental Management Plan is a guidance document to a measure and achieve Compliance with the environmental protection & mitigation requirement of a project.

It is also called be defined as side plan developed to ensure that the project is implemented in an environmental sustainable manner where all Contractors and subContractors, including understand the Potential environmental risks arising. EMP also ensure that the project implementation is carried out in accordance with the design

the predicted negative environmental impact for which mitigation is required should be summarized.

the definite feasible & cost effective mitigation measure to reduce significant negative environmental impacts to acceptable and legal level.

environmental performs monitorized should be perform clearly indicate the linkage b/w impact.

SCS Government Degree College Mendhar, Poonch
Department of Environmental Sciences

Project Report

Topic:

Impact of developmental projects on environment using environmental impact assessment method (EIA)

By

Umar Ishfaq

Parentage: Mohd Ishfaq

Roll No.: 176 Semester: 1st

Course Title: Environment Science and Education (UVAEVT102)

Exercise 1: EIA report of any development project. Study of Environment sensitive places of respective areas.

Narmada River valley Project

Environment impact and Risk Assessment of the purposed Barrage Across River narmada near Bharuch.

Consultant of EIRA Study.

National Environment Engineering Research institute.

Nehru Marg, Nagpur 440020
(India)

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Submitted by.

Narmada, water Resources, water Supply and Kalpasar Department Govt. of Gujrat, Gandhinagar in 2013

→ Silent feature of barrage:

(1) River gorge at Bhadbhut of barrage location - 1600m.

(2) Bed material property - of silty sand.

(3) Type of barrage - barrage on permeable foundation.

(4) Discharge through barrage

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- 77055 cumic.

(5) Total length of barrage is 1663 m.

(6) Number of gates - 90.

(7) Size of gates - 15.5 m × 9.5 m.

→ EIA study by NEERI :-
The govt. of Gujarat retained National Environment Research institute of Nagpur to prepare. EIA in report of the Bhadbhut Barrage project.

→ EIA study scope :-
The scope of study incl-

uded baseline data collection for air, noise, water, waste water, solid waste, marine biodiversity and ecology, impact assessment of anticipate impact of various component.

(1) Air Environment : An area covering 10 km radius distance with Bhedshut barrage site as centre was identified as the study of area. Eleven representative location were selected and concentration of compliance pollutant namely PM10, PM2.5, SO_2, NO_x during all the season.

(2) Noise Environment: Noise level were measured in the surrounding as well as some location include human settlements in the vicinity of the proposed barrage during day and night.

Result: Noise level exceed in commercial area due to increased traffic and human activities.

(3) Water Environment: The water quality assessment was carried out for coastal as well as estuarine zone of Narmada river and also in the upstream area upto 35k

along the river stretches during these season of the year. The result indicated the dominance of saline water.

Result: TDS - 500 mg/L to 5000 mg/L even the low tide whereas, in coastal region, it varies from 34000 to 39000 mg/L in samples collected from surface, middle and bottom location.

(4) Land Environment: The analysis indicated that a lot of organic and the nutrient loading is being carried by the river Narmada and settle at the bottom

along the stretch.

Exercise 2 :- To study the baseline data collection of EIA.

Baseline data is collected to serve two purpose in the EIA study. Baseline data is the data collected about various factor of the project study. This include.

(1) Physical :- the area, the soil properties, the geological characteristics, the topography whershed properties etc.

(2) Chemical :- water, air, noise and soil pollution, level etc

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(3) Biological: the biodiversity of the area types of flora and fauna, species richness, species distribution, types of ecosystem, presence of absence of endangered species of distribution or sensitive ecosystem etc.

(4) Cultural: Location and state of archeological and religious sites.

(3) Socioeconomic: demographic social structure, economic condition, developmental capabilities, displacement of local etc.

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→ How to collected:
There is two board way in which such data can be collected. You can collected it yourself go to field, take readings and measurement and sample, analyse what obtain and present that data. This method is called secondary collection.

→ Impact Identification:
Once this data is collected, the data is used to pridict how to parameter will change once the project is underday. It is an important to note that this

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stage, the focus is not on quantative assessment of the impacts.

This is done using many method. The most common method used all over the world are check list, matrices overlayes etc. This process occur during the scoping stage of EIA running parrell to the preparation of the terms of Reference.

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Exercise 3: To study the impact of any developmental project by Adhoc Method.

Adhoc procedure come into the play when:-

(1) Time constrains and Lack of information require that the EIA must rely on expect in opinion.

(2) Lack of information.

(3) Required that the EIA must rely on expert opinion

→ Selient feature:

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(2) Adhoc method are not base really good material as they do not structure problems

(2) It is more amenable to systematic analysis.

(3) A good example is A team of expert Assembled for a short time to conduct an EIA.

(4) Each expert's conclusions are based on a unique combination of experience, training and intution.

(5) These conclusions are assembled into a report

(6) Sometime this the only required and possible approach.

→ Aim to the adhoc working group:

(1) New regulation and/or

(2) A guide for a practical application of the existing regulation, in order clear procedures and a harmonized.

→ Possible consideration by adhoc working groups

(2) Look into the existing of regulations applicable to EIA procedure.

SCS Government Degree College Mendhar, Poonch

Department of Environmental Sciences

Project Report

On

Impact of Human Activities (Indoor/Outdoor) on Soil, Air and Water Pollution

By

Zohib Khan

Parentage: Mohd Shafiat Khan

Roll No.: 328

Semester: 1st

Course Title: Environment Science and Education (UVAEVT102)

DATE

Exercise 1: visit to various areas for listing the source of pollution - Air (indoor as well as outdoor), water soil.

A visit to the urban suburban and rural areas should be conducted to assess the various sources of Environmental pollution.

For detailed analysis of the various sources of pollution following parameters should be taken into consideration.

Air:

Main sources of outdoor air pollutants

- motor vehicles
- Solid fuel Burning
- Industries.
- forest fires
- windblown dust
- Biogenic emission from vegetation.
- Deforestation.

Types of main outdoor air pollutant

- Particulate matter (PM10 and PM 2.5)
- ozone (O_3)
- Nitrogen Dioxide (NO_2)
- Sulphur Dioxide (SO_2)
- Carbon Monoxide (CO)
- Carbon Dioxide (CO_2)

Main sources of indoor air pollutant

- Tobacco Smoke
- Wood Burning Heaters
- Unflued Gas Heaters
- Candle Burning
- packaging
- Building Material (coatings paints ceiling
- Asbestos cement
- Gasoline Burning.

Exercise 2: impact of vehicular pollution on the road side plants parapets change in colour / dust and carbon deposition.

Colour.
The colour of leaves is recorded by visual observation.
Dust.
Matured plant leaves are collected from the polluted ~~water~~ site to analyse the dust deposition.

Then the leaves are washed in the beaker with distilled water using spray bottle. Then the water is evaporated to collect the remaining dust.

The amount of dust was calculated by taking the initial and final weight of the beaker in which leaf samples were washed.

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it is calculated by using the formula i.

$$w = \frac{W_2 - W_1}{A}$$

Where.
w = Dust content (mg/cm²)
W_1 = Weight of beaker without dust
W_2 = weight of beaker with dust
A = Total area of leaf in cm².

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Exercise 3:- Visit to Wastewater treatment plant Weather station pollution control board.

Waste water Treatment plant.
waste water treatment plant operates to accomplish several process in which the reduction of organic matter destruction of harmful microorganism and reduction of certain chemical substances take place.
The conventional method of waste water treatment has following flow sheet
1 primary Treatment
2 Secondary treatment
3 Tertiary or Advanced Treatment.

0 primary treatment.
a Screening: it consists of iron bars of removal of rags plastic wood etc

b Grit chamber: waste water is retained for sometime in this chamber to settle down grit and other heavy materials.

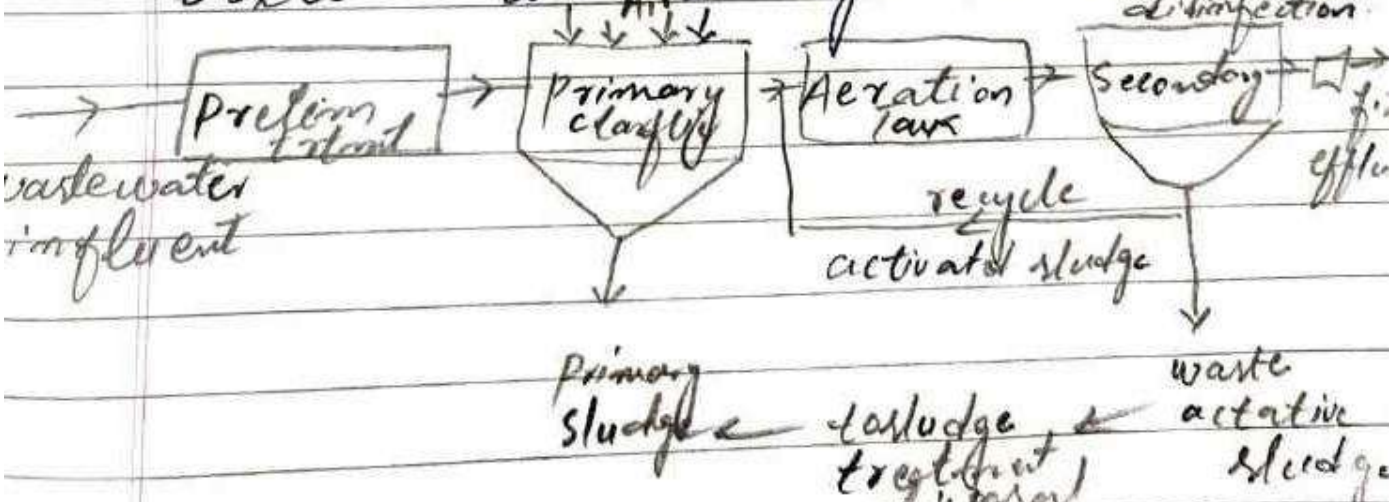
c) primary settling Tank: it help to remove most of the suspended solid by gravity. Here the waste water is retained for 90 to 120 minutes. The settled solids are "raw" sludges: which is usually removed mechanically to be digested later in the sludge digester.

2 Secondary Treatment.
it involves microbial decomposition of the organic solids left out in the waste water after primary treatment it has.

a) Trickling filters: Waste water is passed over the tricking filter which can be bed of small stone or other such inert material.

organisms that grow in a thin-biofilm over the surface of filter oxidizes the organic load in the waste water to Co2 and water

b Activated sludge process: The effluent from the primary clarifier goes to aeration tank. Aeration tank also receives microorganisms from the secondary settling tank known as activated sludge. oxygen is pumped into aeration tank of creating aerobic conditions. Then water enters secondary settling tank where solids settle at the bottom and sludge is removed.



waste water treatment flow diagram

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3 Tertiary or Advanced Treatment

it aims at removing nutrients and disinfection by chlorination.

→ The material to be removed in this treatment includes nitrates and phosphate, colour, bacteria, viruses pesticides toxic metals etc

Exercise 4: Collection and preservation of water and soil samples.

Collection of sample is the process in which a portion of material from the environment including lake's water, soil etc. is collected for the purpose of analysis.

Requirements: Special sample containers, Sample preservatives (eg acid solutions), field note book

Procedure

1. Rinse the sample container with the sample before it is filled
2. Label the sample container with name, data, place and simple code.
3. Air space should be kept in the container for proper mixing of the sample at the time of analysis and thereafter seal the sample containers properly.

Collection of water sample.

1 Samples should be collected from well mixed section of the main stream of the river 30 cm below the water surface using a weighted bottle

2 Dissolved oxygen is determined in a sample collected in a DO bottle using D.O sampler.

3 Sample for DO & and bacteriological analysis should be stored at temperature less than 4°C / ice or cold packs and the data after sampling

Collection of soil sample. Soil sample can be collected by digging up to a depth of 5 to 10 inch. After the collection of soil sample the should be sun dried and preserved. Then the soil sample can be analyzed for various parameters

DATE: / /

Exercise 5: Assessment of noise level of different zones Commercial Residential, traffic and silent zones.

Requirement: Noise Sampler.

procedure: The noise levels of different zones is assessed by using noise level meter. The sampling of noise level using noise level meter is done at a height of 1-5m away from the chest. During each sampling of noise 20 readings of spl (Sound pressure level) are recorded at an interval of 30 second in a period of 10 minutes. From the observed reading of spl. the minimum and maximum spl are also recorded. From the 20 reading of spl obtaine

of each time interval Leq is calculated by using the following formula.

or

$$Leq = 10 \log \left(\sum_{i=1}^{n} fi \, 10^{Li/10} \right) dB(A)$$

Where fi = fraction of time for which the constant sound level persists.

i = time intervals

n = number of observations

Li = sound intensity at a time interval.

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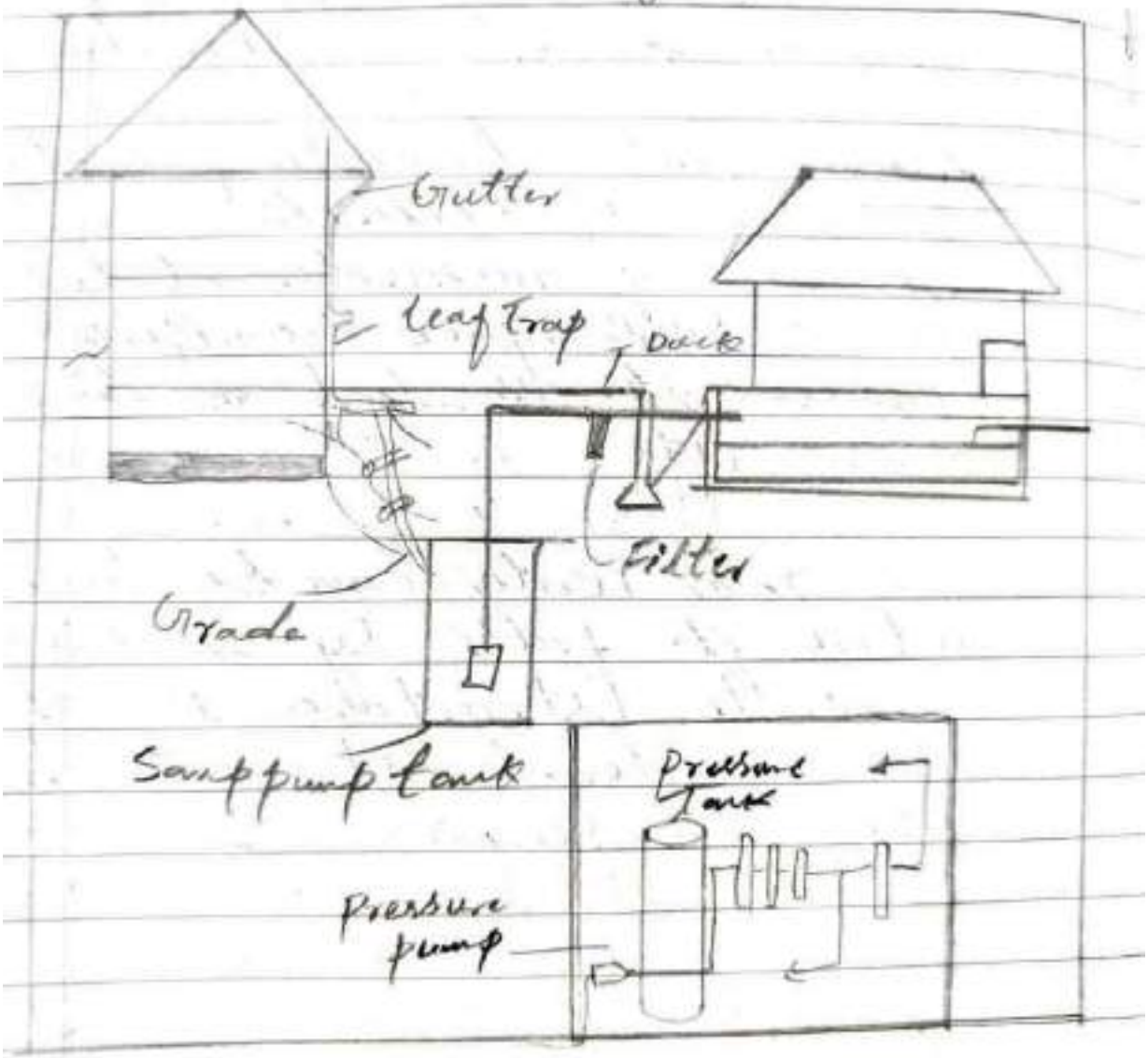
Exercise 6: Demonstration / preparation of working model of rain water harvesting structure.

Rain water harvesting is the technique of collection and storage of rainwater at surface or in subsurface aquifers before its is lost as surface run off.

The rain water can be harvested where it falls by making suitable structure to store. it is local stream drain ponds reservoirs and rooftop of the buildings. The water can be directly used for domestic irrigation and industrial sectors. it can be also be used for artificial recharge of ground water.

Rain water harvesting system Schematic



SCS Government Degree College Mendhar, Poonch
Department of Environmental Sciences

Project Report

On

Impact of Human Activities (Indoor/Outdoor) on Soil, Air and Water Pollution

By

Waqar Ahmad

Parentage: Mohd Latief

Roll No.: 333

Semester: 1st

Course Title: Environment Science and Education (UVAEVT102)

→ Exercise 1: visit to various areas for listing the sources of pollution - Air (indoor as well as outdoor), water, soil.

- A visit to the urban, suburban and rural areas should be conducted to asses the various sources of environmental pollution.
- for detailed analysis of the various sources of pollution, following parameter should be taken into consideration.

AIR

Main sources of outdoor air

pollutants.

- Motor vehicles
- Solid fuel Burning
- Industries

→ Types of main outdoor air pollutants.

- Ozone (O_3)
- Nitrogen Dioxide (NO_2)
- Sulphur Dioxide (SO_2)

→ Main sources of indoor Air pollutants.

- Tobacco Smoke
- Wood Burning Heaters
- Unflued Gas Heaters.

→ Types of Indoor Air pollution.

- Asbestos
- Biological pollutants
- lead

Water

→ Main sources of water pollution

- Agricultural wastes
- Domestic sewage
- oil pollution.

→ Types of Water pollutants.

- Suspended matter
- Inorganic pollutants
- Toxic Metals.

Soil

→ Main Sources of soil pollution

> Industrial waste
> Agricultural waste
> Acid Rain
> Urban waste
> Biological waste

→ Main Types of soil pollutants

> Toxic chemicals
> pesticides, fertilizers.
> Radioactive Substances
> Pathogens.

→ Exercise 2:- Impact of vehicular pollution on the road side plants / parapets - change in colour, dust and carbon deposition.

- Colour:- The colour of leaves is recorded by visual observation.

- Dust:- Matured plant leaves are collected from the polluted site to analyse the dust deposition.

Then the leaves are collected from the polluted site to distilled water

leaves using spray bottle. Then the leaves is evaporated to collect the remaining dust.

The amount of dust may calculated by taking the initial and final weight of the beakers in which leaf samples were washed.

It is calculated by using the formula:-

$$H = \frac{W_2 - W_1}{A}$$

Where, W = Dust content (mg/m²).

W_1 = weight of beaker without dust.

W_2 = weight of beaker with dust.

A = Total area of leaf in cm^2.

→ Exercise 3:- Collection and preservation of water and soil samples.

- Collection of sample containers, is the process in which a portion of materials from the environment including air, water, soil etc. is collected for the purpose of analysis.

→ Requirements: Special sample containers, Sample preservations (eg Acidy solution) field notebook.

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Procedure:-

1. Rinse the sample container with the sample, before it is filled.

2. Label the sample container with name, date, place and sample code.

3. Air space should be kept in the containers for proper mixing of the sample at the time of analysis and then the sample container property.

→ Collection of water Sample

1. Samples should be collected from well mixed section of the main stream of the river, 30 cm below the water surface using a weighted bottle.

2. Dissolved oxygen is determined in a sample collected in a D.O sample must be fixed immediately after collection using chemical reagents

3. For analysis of COD, the samples should be pre

exceed by adding H_2SO_4 to reduce its pH at 2.

4. For analysis of heavy metals, concentrated nitric acid (HNO_3). should be added for the acidification of samples.

- Collection of soil sample:- Soil sample can be collected by digging up to a depth of 5 to 10 inch. After the collection of soil sample, they should be sun dried and preserved. Then the soil sample can be analyzed for various parameters.

→ Exercise 4:- Visit to waste water treatment plant wastewater station / pollution control board.

- Waste water Treatment plants :- Wastewater treatment plants operate to accomplish several process in which the reduction of Organic matter, destruction of harmful microorganism and reduction of certain chemical substances take place.

→ The conventional meth

of wastewater treatment by following three stages.

1. Primary Treatment
2. Secondary Treatment
3. Tertiary or Advanced Treatment

1. Primary Treatment:-

(a) Screening:- It consists of iron bars for removal of rags, plastics, wood etc.

(b) Grit chamber:- wastewater is retained for some time in this chamber to settle down grit and

SCS Government Degree College Mendhar, Poonch

Department of Environmental Sciences

Project Report

On

Impact of Human Activities (Indoor/Outdoor) on Soil, Air and Water Pollution

By

Waqar Ahmad

Parentage: Zabir Ahmad

Roll No.: 276

Semester: 1st

Course Title: Environment Science and Education (UVAEVT102)

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Exercise 1: Visit to various areas for Listing the source of pollution Air indoor as well as outdoor, water soil?

AIR

source of outdoor Air pollution
motor vehicles
solid fluid burning.
Industries.
Forest fires.
wind blown dust
Deforestation.

- Types of main outdoor air pollutant.
- particulate matter

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- ozone.
- Nitrogen oxide
- Sulphur dioxide.
- carbon monoxide.

ain sources of indoor Air Pollution

- Tobacco Smoke
- Wood burning Heaters.
- unflued gas Heater
- Packaging
- Gasoline Burning.

ypes of Indoor Air pollution

- Asbestos
- Biological Pollutants.
- Carbon monoxide
- lead

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water.

main sources of water pollution

- Agriculture wastes.
- Domestic sewage.
- Oil pollution
- industrial effluents.
- Thermal Pollution.

Types of water pollutions.

- Suspended matters
- Inorganic matters.
- Toxic metals.
- Oils.
- Hydrocarbon.
- Pathogens
- Radioactive pollution.

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rcise:2 Impact of vehicular pollution of the road side plants / parapets change in colour, dust & carbon deposition?

our The colour of leaves is rec. by visual observation.

st Matured plants leaves are collected from the polluted site to analyse the dust deposition. Then the leves are washed in the beaker with distilled water using spray bottle. Then the water is evaporated to collect the remaining dust. The amount of dust was calculated by taking the intial and final

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weight of the beaker in which leaf samples were washed.

It is calculated by using formula

$$W = \frac{W_2 - W_1}{A}$$

where, W = Dust content (mg/cm_2)

W_1 = Weight of beaker without dust

W_2 = Weight of beaker with dust.

A = Total area of leaf in cm_2.

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Excercise: 3 Demostration/ prepration of working models of rain water harvesting structure:

Rain water: Harvesting is the technique of collection & storage of rain water at surface or in subsurface aquifers before it is lost as surface runoff

The rain water can be harvested where it fall by making suitable structure of store. It is local streams, drains, ponds, reservious & recycle of the building. The water can be directly used for domestic, irrigation &

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and industrial sectors. it can be also be used for artificial rebarge of ground water.

- components of Rainwater Harvesting structure.
- Gutters and downtake pipes. it take the water from the catchmen surface to the storage tank.
- storage tanks. The storage tanks can be constructed above or below the ground.
- Delivery system: is comprised of pipes used to convey the stored rainwater till the point of end-use.

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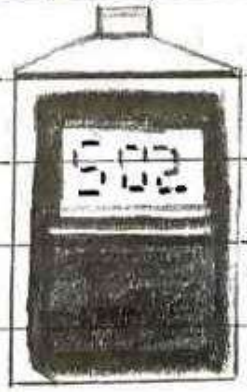
Exercise 4: Assessment of noise level of different zones - commercial residential, traffic, & silent zones?

Requirements: Noise sampler.



Procedure: The noise levels of different zones i.e commercial residential, traffic and silent zones is assessed by using noise level metere. The sampling of noise level using level meter is done at a height of 1.5 m away fro the chest. During each sampling of

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noise 20 readings of SPL (sound pressure level) are recorded at an interval of 30 seconds in a period of 10 minutes. From the observed readings of SPL, the minimum and max. SPL are also recorded. From the 20 reading of SPL obtained for each time interval leq is calculated by using the following formula

$$Leq = 10 \log \left(\sum_{i=1}^{n} fi \, 10^{Li/10} \right) dB(A)$$

here, fi = fraction of time for which the constant sound level persists.

i = time intervals.

n = no of observation.

Li = sounds intensity at a time interval.

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Exercise 5:- Visit to wastewater treatme
Plant weather station / pollution
control board.

Waste water Treatment plants.

Waste water treatment plants
operates to accomplish several
process in which the reduction of
organic matter. destruction of harmfu
microorganism and reduction of certai
chemical substance take place.

- The conventional method of waste.
water treatment has following three
stage —

1. Primary treatment.
2. secondary Treatment.
3. Tertiary or Advanced treatment.

1. Primary Treatment

a. screening: it consists of iron bars for removal of rags, plastics, wood etc.

b. Grift chamber:- Waste water is retained for sometime in this chamber to settle down grit and other heavy materials.

c. Primary settling tank:- it helps to remove the suspended solids by gravity. The settled solids are raw sludges which is usually removed mechanically to be digested later in the sludge digester.

2.

- Secondary Treatment.

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a. Trickling filters :- Waste water is passed over the trickling filter which can be bed of small stone or other such inert material. Organism that grow in a thin bio-film over the surface of filter oxidizes the organic load in the waste water to CO_2 and water.

b. Activated sludge process: The effluent from the primary clarifier goes to aeration tank. Aeration tank also receives microorganism from the secondary settling tank knows as activated sludge.

3. Tertiary or Advanced treatment.
It aims at removing nutrients and disinfection by chlorination.

» The materials to be removed in this treatment includes nitrates and phosphate, colour, bacteria, viruses, pesticides, toxic metal etc.

SCS Government Degree College Mendhar, Poonch

Department of Environmental Sciences

Project Report

On

Impact of Human Activities (Indoor/Outdoor) on Soil, Air and Water Pollution

Waqar Ahmad

Parentage: Qadeer Hussain

Roll No.: 384

Semester: 1st

Course Title: Environment Science and Education (UVAEVT102)

- Exercise ①:- Visit to various areas for listing the sources of pollution - Air, water, soil.

A visit to the urban, suburban and rural areas should be conducted to assess the various sources of Environmental pollution.
For detailed analysis of the various sources of pollution, following parameters, should be taken into consideration.

Air

⇒ Main sources of outdoor air pollutants
- Motor vehicles
- Solid fuel burning.
- Industries.
- Forest fires.
- Windblown dust.
- Biogenic emission from vegetation.
- Deforestation.

⇒ Types of main outdoor air pollutants

- Particulate matter (PM 10 & PM 2.5).
- Ozone (O_3).
- Nitrogen dioxide (NO_2).
- Sulphur dioxide (So_2).
- Carbon monoxide (Co).
- Carbon dioxide (Co_2).

⇒ Main sources of indoor air pollutants
- Tobacco smoke.
- Wood burning heaters.
- Unflued gas heaters.
- Candle burning.
- Packaging.
- Building material.
- Asbestos cement.
- Gasoline burning.

⇒ Types of indoor air pollution
- Asbestos.
- Biological pollutants.
- Carbon monoxide.
- Formaldehyde.
- Lead.
- Nitrogen dioxide.

- Radon.
- Indoor particulate matter.
- Pesticide.
- Volatile organic compounds.

Water

⇒ Main sources of water pollution
- Agriculture wastes.
- Domestic sewage.
- Oil pollution.
- Radioactive substances.
- Industrial effluents.
- Thermal pollution.
- Mining activities.

⇒ Types of water pollutants
- Suspended matter.
- Inorganic pollutants.
- Toxic metals.
- Organic pollutants.
- Oils.
- Hydrocarbons.
- Oxygen demanding wastes.
- Pathogens.

Soil

⇒ Main sources of soil pollution
- Industrial waste.
- Agricultural waste.
- Biological agents.
- Mining and smelting.
- Radioactive pollutants.
- Acid rain.
- Urban wastes.

⇒ Main types of soil pollutants
- Toxic chemicals.
- Pesticides, Herbicides and Fertilizers.
- Solid waste.
- Radioactive substances
- Pathogens.

Environmental pollutants vary from area to area depending upon the sources of pollution present in the study area.

- Exercise ②:- Impact of vehicular pollution on the road side plants parapets - changes in colour, dust & carbon deposition.

Colour:- The colour of leaves is recorded by visual observation.

Dust:-

Matured plant leaves are collected from the polluted site to analyse the dust deposition.

Then the leaves are washed in the beaker with distilled water using spray bottle.

Then the water is evaporated to collect the remaining dust.

The amount of dust was calculated by taking the initial and final weight of the beaker in which leaf samples were washed.

It is calculated by using the formula.

$$w = \frac{W_2 - W_1}{A}$$

where,

w = Dust content.
W_1 = Weight of beaker without dust
W_2 = Weight of beaker with dust.
A = Total area of leaf in cm_2.

- Exercise ③:- Collection and preservation of water and soil sample.

Collection of sample is the process in which a portion of material from the environment including air, water, soil etc. is collected for the purpose of analysis.

⇒ Requirements:- Special sample containers, sample preservatives, field notebook.

⇒ Procedure:-

(1) Rinse the sample container with the sample, before it is filled.
(2) Label the sample container with name, date, place and sample code.
(3) Air space should be kept in the container for proper mixing of the sample at the time of analysis and thereafter seal the sample container properly.

⇒ Collection of water sample:-

(1) Samples should be collected from well mixed section of the main stream of the river, 30cm below the water surface using a weighted bottle.

(2) Dissolved oxygen is determined in a sample collected in a D.O bottle using a D.O sampler.

(3) The dissolved oxygen in a sample must be fixed immediately after collection, using chemical reagents.

(4) Samples of BOD and bacteriologic analysis should be stored at temperature less than 4°C and in the dark after sampling.

(5) The samples should be transferred to refrigenrators as soon as possible.

For analysis of COD, the sample should be preserved by adding H_2SO_4 to reduce its pH at 2.

For analysis of heavy metals, concentrated nitric acid should be added for the acidification of sample.

Collection of soil sample:- Soil sample can be collected by digging up to a depth of 5 to 6 inch. After the collection of soil sample, they should be sun dried and preserved. Then the soil sample can be analyzed for various parameters.

- Exercise (4) :- Visit to wastewater treatment plant, weather station pollution control board.

⇒ Waste water treatment Plants:-

Wastewater treatment plants operates to accomplish several process in which the reduction of organic matter, destruction of harmful microorganism and the reduction of certain chemical substances takes place.

The conventional method of waste water treatment has following three stages:-

(1) Primary treatment.
(2) Secondary treatment.
(3) Tertiary or Advanced treatment

(1) Primary treatment:-

(a) Screening:- It consists of iron bats for removal of rags, plastics etc.

(b) Grit chamber:- Waste water is retained for sometime in this chamber to settle down grit and other heavy materials.

(c) Primary setting tank:- It helps to remove most of the suspended solids by gravity. Here the waste water is retained for 90 to 150 minutes. The settled solids are "raw sludges" which is usually removed mechanically to be digested later in the sludge digester.

(2) Secondary treatment:-

It involves microbial decomposition of the organic solids left out in the waste water after primary treatment. It has:-

(a) Trickling filters:- Waste water is passed over the trickling filter which can be bed of gravel stone or other such inert material. Organisms that grow in a thin bio-film over the surface of filter oxidizes the organic load in the waste water to CO_2 and water.

(b) Activated sludge process:- The effluent from the primary clarifier goes to aeration tank. Aeration tank also recives microorganism from the secondary settling tank known as activated sludge. Oxygen is pumped into aeration tank for creating aerobic conditions. Then water enters secondary settling tank where solids settle at the bottom and sludge is removed.

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(3) Tertiary or advanced treatment:-

It aims at removing nutrients and disinfection by chlorination.

The materials to be removed in this treatment includes the nitrates and phosphate, colour, bacteria, viruses, pesticide, toxic metals etc.

Exercise (5) :- Assessment of noise level of different zones, commercial, residential, traffic and silent zones.

Requirements :- Noise sampler.

Procedure :- The noise levels of different zones i.e. commercial, residential, traffic and silent zones is assessed by using Noise level meter.
The sampling of noise level using noise level meter.
The sampling of noise level using noise level meter is done at a height of 1.5m away from the chest.
During each sampling of noise 20 readings of SPL are recorded at an interval of 30 seconds in a period of 10 minutes. From the observed readings of SPL,

the minimum and maximum SPL are also recorded. From the 20 reading of SPL obtained for each time interval Leq is calculated by using the following formula.

$$Leq = 10 \log \left(\sum_{i=1} fi \, 10^{Li/10} \right) dB(A).$$

where, fi = fraction of time for which the constant sound level persists.

i = time intervals.

n = number of observations.

Li = Sound intensity at a time interval.