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IMPLEMENTATION OF ENVIRONMENTAL AUDIT PROCEDURES FOR SUSTENANCE ECOFRIENDLY CAMPUS

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Abstract

In order to maintain an eco-friendly campus, especially an educational institution, constant efforts should be made continuously to provide learning atmosphere to various stakeholders. Environmental protection initiatives are substantial in terms of creating effective solid waste, wastewater treatment facilities, improved sanitation and maintenance of natural vegetation in the campus without damaging the environmental components. Environmental protection activities followed by any organization should be in line with their policy and it should be in compliance with legislative policies of State and Central Government Authorities. A campus ecosystem should be supported by a rich biodiversity of flora and fauna which makes a sustainable environment. In addition, every organization should have some Technology Missions related to Clean Development Mechanism. Schemes launched by Government of India under 'Clean India Mission' may be implemented effectively by the organization to promote sanitation and cleanliness within the campus and to educate rural and tribal people across the country. Environmental audit is an indicator which offers the information to the management about their activities in relation to environmental protection. Based on the audit report, best practicable ways and means can be applied to preserve air, water, soil, and biodiversity from present day adverse impacts. This article reviews the environmental audit requirements and procedures to conserve the ecological components with particular reference to educational institute in India.

Keywords: Environmental Audit, Environmental Audit Tasks , Environmental Auditor , Methodology , Global Experience

Introduction

Environment audit is a review process wherein the facility status with regard to environment, health and safety regulations adopted by an organisation will be evaluated. In other words, the audit is a systematic, documented, periodic and objective oriented review by a regulated entity with the management support. Environment audit is quantitative and qualitative data tracking of air, soil and water waste and to gain actionable insights to improve the operational performance. It also leads to enhancing the quality of life of all living organisms. Eco audit initiatives are the need of the hour across the world due to change in environmental conditions, global warming and increasing anthropogenic activities (Maltby, 1995; Haahkim and Yunus, 2017). In general, environmental audit is designed to achieve a maximum resource optimization and improved process performance in the audit sites. It is a 'Common Sense Approach' to identify the problems and to solve the same pertaining to curb eco-friendly atmosphere (Conde and Sanchez, 2017). Environmental audit enables a comprehensive look at the audit sites to facilitate our understanding of material flows and to focus the attention on areas where waste reduction can be executed and therefore cost saving is made possible (Gowri and Harikrishnan, 2014).

Objectives of an environmental audit

Environmental audit refers to checking system procedures against standards or regulations; but it is often used to cover the gathering and evaluation of any data with environmental relevance and this should actually be termed as an environmental review (Rajalakshmi *et al*., 2021). An environmental audit is a type of evaluation intended to identify environmental compliance and management system implementation gaps, along with related corrective actions. Depending on the types of standards and the focus of the audit, there are different types of environmental audit like ISO. Organizations of all kinds now recognize the importance of environmental issues and accept that their environmental performance will be scrutinized by a wide range of interested parties.

Impact of technology on environment

Innovative technological evolution revolutionized day-to-day routine in a way; however, environment alone determines a healthy life of human beings and all other living organisms (Alba-Hidalgo *et al.*, 2018). In recent years, technology has made 'giants leap' in all area, particularly communication which facilitated many services possible in a single click. Technology has evolved so much and with it, the desire for distinctive requirements has been widened. Our lives have been impacted by using technological evolution in so many one-of-a-kind methods that it's far hard to quantify or enumerate some of the most impacted areas. These technologies have damaged our global environment most in terms of exorbitant pollution and depletion of natural resources.

Environmental degradation

Environmental degradation is one of the prime threats which can be checked out within the world today. Environmental degradation means degeneration of earth or weakening of environment by exploiting natural resources exorbitantly which may led to extinction of certain genera/species of living organisms. It is characterized as any trade or aggravation to nature's turf seen to be pernicious that is undesirable. Ecological effect or degradation is created by the consolidation of an efficiently good sized and increasing human population (Buckman *et al*., 2014). Though the effects are not known to all, the largest of those effects are felt by some animal and plant groups, the majority of which can be unique for their region and so it is necessary to ensure that their genetic lines are preserved intact (Cardenas and Halman, 2016).

Depletion of natural resources

Resource depletion is another adverse impact on the environment. It refers back to the intake of a useful resource quicker than it may be replenished. Natural sources consist of those which are in existence without human beings having created them and that they may be both renewable and non-renewable. Due to the growing international populace, ranges of natural useful resource degradation also are increasing. Since the commercial revolution, massive-scale mineral and oil exploration has been increasing, inflicting increasingly more natural oil and mineral depletion.

Environmental education

Environmental education is a way of preparing the community to identify the environmental issues, to have interaction in hassle fixing and take decision to improve the surroundings. As a result, people broaden their knowledge on environmental troubles. Environmental education does no longer recommend a specific standpoint or direction of motion. Rather, environmental education teaches people how to weigh diverse aspects of a difficulty through logical thinking and it enhances their problem solving and decision-making competencies. Key components of environmental education include a) transformation of knowledge on environment and its challenges, b) improving attitudes of concern for improving or hold environmental quality parameters, c) perceive the skills to help/resolve environmental challenges and d) possible participation in environmental activities to resolve the issues.

Role of educational institutions in India

A clean and healthy environment determines effective learning and provides an encouraging learning environment to the students. Educational institutions are asked by both Central and State Governments to provide eco-friendly atmosphere to the stakeholders. Institutions implementing the Swachh Bharath Abhiyan Scheme launched by Government of India provide a tidy and clean environment to the stakeholders besides creating awareness among tribal, rural and urban people across the country. Besides the regular and conventional activities carried out by NSS, NCC, Nature club, Eco club, Science club, Fine Arts club, Flora and Fauna club, Youth Red Cross unit, etc., Seminar, Conference, Workshop, training and awareness programmes on biodiversity conservation education, environmental awareness programmes, etc. may be conducted periodically with the help of management/ administrative people (Abba *et al*., 2018).

Environment friendly campus

The term 'eco-friendly', commonly refers to the products that contribute to green living or practices thro' "Go Green Concept" that ensures conservation of water, energy and other natural resources. Environment friendly processes are sustainability and marketing terms referring to goods and services, laws, guidelines and policies that claim reduced, minimal, or no harm upon ecosystems or the environment. To ensure the successful meeting of Sustainable Development Goals (SDGs) companies and Educational Institutions are advised to employ environmental friendly processes in their production as well as providing good ambience to the stakeholders in their working place. International Organization for Standardization has developed ISO 14001:2015, 14020 and ISO 14024 to establish principles and procedures for environmental labels and declarations that certifies the environment friendly campus. In particular, these standards relate to the avoidance of financial conflicts of interest, the use of sound scientific methods and accepted test procedures and transparency in the setting of standards (Aerts *et al*., 2008; Abba *et al*., 2018). In order to maintain and preserve the eco-friendly environment, any organizations should propose their policies/plans in line with statutory authorities.

Figure.1. Environment friendly campus

Ecology and environment concept

Richness/scarce of ecological components facilitates to realise "how the environment is being affected/degraded?" Lack of information of ecology has led to the degradation of land and natural resources. It may be noted that degradation of land and its resources led to the extinction and endangerment of positive species (living organisms). Hence, understanding the environment and organisms is required which facilitate to defend them from harmful impacts. Lack of ecological understanding has led to shortage and deprivation of these assets, leading to competition (Verma *et al*., 2012). As mentioned earlier, environmental audits ensure that the ecological components should not be disturbed from its balance, so that it offers congenial atmosphere. Environment/green audits claim that the campus should contain a large number of green plants which discharge considerable quantum of oxygen while they assimilate more amount of carbon dioxide to preserve a healthy atmosphere (Aparajita, 1995; Adeniji, 2008). With the coordination of expertise, it is necessary to understand and to document the assets/resources that are important for the survival of living organisms in an ecosystem. In this context, it is necessary to formulate energy and environment policies and environmental management plans to regulate/preserve the ecological components.

Environmental management plan

Environmental protection planning is an important component of overall planning and implementation of eco-friendly and green campus elements of an organization. It is addressing issues ranging from human health, environmental cleanliness to protection of all living organisms and their habitats. Environmental Management Plan (EMP) is an important integration document which relates to various approvals, authorizations and specific components and/or activities that are carried out within the campus. Main objective of the EMP is to outline environmental protection measures to be followed during the organization development and to ensure that commitments to minimize the adverse environmental impacts. EMP should provide a reference document as per the legislative requirements for personnel when planning and/or conducting specific activities in the campus surroundings. In line with the Environment Policy, impact on the physical, chemical and biological environment should be determined along with statutory requirements and other environmental commitments (Goyal and Gupta, 2014; Ramachandra and Bachamanda, 2007).

Energy and environment policy

Energy and environment policy aims to provide an education and awareness in a clean and green environment to the stakeholders in line with environmental compliance. Policy deals with cleanliness on the campus maintained through proper disposal of wastes and steps taken to recycle the biodegradable wastes. Head of the Organization, Department Heads and Senior Managers including Management Representatives are responsible for monitoring and implementation of "Go Green" initiatives of the College / University besides student volunteers various clubs and staff.

Environmental health and safety management system

Environmental health and safety management system is outlined the measures to mitigate adverse impact and to adopt best management practices in terms of developing eco-friendly and green campus. It is recommended to carry out a complete assessment and control of all potential hazards and risks arise in the organization without harming the environment. It ensures that no significant adverse environmental health while creating various infrastructure facilities to improve the human eco-system of the organization. The facility should be designed such a way to include fire protection systems, multiple gas, flame, smoke and low- and high temperature detectors and alarms, and automatic and manual shut-down systems in terms of planning and implementing the best practices of environmental health and safety management system (Marwa *et al*., 2020).

Environmental risk assessment

An environmental risk assessment allows the likelihood of the business models causing harm to the environment which directly affect the quality of life. This includes describing potential hazards and impacts before taking precautions to reduce the risks to the stakeholders. It uses similar techniques to the health and safety risk assessment to the business already must perform to the ecosystem services (Aerts *et al*., 2008; Abba *et al*., 2018). Environmental risk assessment may be carried out based on the various parameters viz., 1) review the assessment at regular intervals, 2) record the results of the assessment and implement precautions, 3) evaluate the risk of occurrence and identify precautions and 4) identify any hazards and possible sources of harm besides 5) documentation and 6) execution of precautionary control measures. An environmental risk assessment is used by risk managers and policymakers to document non-conformance and potential environmental hazards caused by the business.

Solid waste management

The term, solid waste control is to convey the method of treatment of accumulated wastes following eco-friendly manner. It also offers ways and means for recycling the waste that do not belong to garbage or trash. In the solid waste management, the wastes are accrued from different parts and are disposed of based on degradable (paper, organic wastes, plant liters, etc.) and non-degradable (glass, plastics and metals) materials. Integrated Solid Waste Management (ISWM) is an activity that promotes prevention of excessive waste through reuse, renew and recycling protocols and remaining scanty stable waste can be disposed. The Ministry of Environment, Forest and Climate Change, Government of India has notified the Solid Waste Management Rules, 2016. The rules categorized the generated wastes in to different types; as per rules, the local bodies are responsible for the collection, treatment and disposal of solid wastes (Irwansyah, 2017, Irwansyah *et al*.,

2017). As an organization, educational institutions are also equally responsible for collection, treatment and disposal of wastes within the campus. In this context, all the educational institutes should have a solid waste recycling unit and operates a couple of vehicles for transportation of waste across the campus. Generated waste collected from different places of the campus is segregated in accordance with their degrading nature (Kevin *et al.*, 2017). It may be noted that the solid wastes generated from distinctive industries encompass toxic metals, chemical substances and risky waste. When these are launched into the surroundings, it creates adverse impact on environment while chemicals may percolate into the soils and pollute the groundwater resources besides damaging the productivity of the soils.

Waste management plan

Waste management is a critical component of organization's operating policies. It provides guidelines and simplifies the process of proper handling, collection, categorisation, quantifying, storage, transportation, managing and disposing/recycling of solid wastes in the organization. Waste management plan has been developed properly in compliance with environment laws and legislative policies and regulations (Sharp, 2012; Sharma, 2020). Based on the type of waste, it can be disposed through on site disposal facility, reserve pits, incineration and evaporation ponds. For on-site disposal, burial pits may be created in which waste should be buried and covered with thick layer of soil as “daily cover” in order to reduce the environmental pollution (odour from decaying wastes, spreading due to wind, vermin and disease vectors, flies and mosquitoes.). Reserve pits should be properly designed and lined to avoid soil, groundwater and surface water contamination wherein drilling waste, chemical waste, oily sludge and contaminated soils can be stored temporarily. Trash can be burnt (devoid of glass, metal, plastics and other items that cannot be incinerated) and ash should be buried in the lined landfill as it may contain heavy metals. Properly lined evaporation ponds can be used to dispose of produced water at certain facilities.

Plastics and their impact

Plastic waste management rules 2016, issued by the Ministry of Environment, Forest and Climate Change is governed the usage of plastics and its management in India. According to the Central Pollution Control Board report ~3.3 million tonnes of plastic waste generated in a year in India. In other words, around 26,000 tonnes of plastic waste generated per day, of which 60% is recycled. Unlike the organic degradable wastes, plastics doesn’t degradable in nature and it hang around the environment, years together. It can take masses or even heaps of years for plastic to break down so the environmental harm is lengthy-lasting (Goyal and Gupta, 2014). It impacts all organisms in the food chain. In other words, this has resulted in adverse impact inclusive of animal choking, pollution, blockage of channels, rivers and streams, and landscape disfigurement. Due to adverse environmental impacts Governments of certain nations have banned the usage of plastics (Eriksson *et al.*, 2016). It may be noted that 96% of plastic wastes are collected and segregated by respective local urban bodies where recyclable plastic waste is sold to the recyclers and remaining portion are sent for co-incineration in cement plants. A number of life cycle assessment studies have been undertaken within the last three decades comparing end-of-life treatment options for post-consumer plastic waste, including techniques such as: mechanical recycling, feedstock recycling, incineration with energy recovery and land filling (Lazarevic *et al.*, 2010). Though the educational institutions and other organisations extended their support to the local authorities for disposing the waste generated, it is needless to say certain basic dual purpose facilities (wastewater treatment plant, biogas generation plant, composting pits, evaporation bonds, etc.) should be established within the campus. These facilities promote self-dependency, keep the environment clean and provide additional benefits like production of organic manure/vermicompost, biogas fuel and adequate recycled water for vegetation.

Biogas plant facility

A biogas plant is a system of fermenting biomass using cow dung and plant waste products which resulted in production of biogas (methane-containing fuel) that is usually present in energy crops or waste substances such as manure or food waste (Abanades *et al.*, 2021). Biogas production was mediated by microorganisms and decomposition of the substrate taking place in anaerobic situations. Stored substrate at anaerobic conditions is periodically shifted using agitators. Agitation did not allow formation of surface scum and sinking layers and permits the biogas to rise greater effortlessly (Miltner *et al.*, 2017). Installing biogas plant in educational institutions and industries help in the waste management process, as the wastes accumulated in canteen, hostels, mess and restaurants can be used for biogas plant, which in turn can be used for cooking. Left over residues from the substrates at the end of fermentation can be used as fertilizer. This fulfils dual purposes simultaneously by energy saving and efficient waste management plans.

Figure.2. Biogas unit

Composting pits and vermin-compost unit

Comp

Vermicompost application enhances plant-microorganism interaction and imparts resistance against pathogens; improves the physico-chemical properties of applied soils and facilitates slow release of nutrients and organic acids. Vermicompost application favours root absorption and increases breathability of the soils.
Educational institutions and companies can install vermicompost unit in their campuses, as it facilitates waste management.

Napkin disposal facility

Menstrual Hygiene Management (MHM) is an indispensable part of the Swachh Bharath Mission Guidelines (SBM-G) under Clean India Mission for adolescent girls and ladies. MHM insists 'Safe disposal' through the process of destruction of used and dirty sanitary materials without human touch. Napkin incinerators confirms safe disposal with minimum environmental pollutants while 'unsafe disposal' method throwing used material into water resources and inside the fields have to be avoided. Offsite disposal can be prepared with the communal or town solid waste collection and management system. Burning in an open heap ought to be totally prevented.

Fig.3. Napkin disposal Machine

Hazardous waste management

The Ministry of Environment, Forest and Climate Change, Government of India, New Delhi has notified the Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016 under the Environment (Protection) Act, 1986. According to the rules, hazardous waste are nothing but "any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances". The organization should be undertaken in pioneering efforts to dispose the hazardous waste properly that are generated from various department laboratories without affecting the natural resources (Nascimento and Filho, 2010).

e-waste management

Ministry of Environment, Forest and Climate Change, Government of India enacted the e-Waste Management Rules, 2016 which is enforced in our country. Electronic waste or e-waste comprises old and expired electrical/electronic appliances such as telephones, cellular telephones, computers, laptops, television sets, refrigerators, washing machines, air-conditioners, fluorescent and other mercury containing lamps etc. According to the rules, every manufacturer, consumer, collection centre, dealer, e-retailer, refurbisher, dismantler and recycler involved in the manufacture, sale, transfer, purchase, collection, storage and processing of e-wastes or electrical and electronic equipments are responsible for e-waste management and disposal.

Management of construction and demolition wastes

Construction and demolition of waste management should be undertaken as per the Ministry of Environment, Forest and Climate Change, Government of India has notified the Construction and Demolition Waste Management Rules, 2016. These Rules apply to every waste resulting from construction, re-modelling, repair and demolition of any civil structure of individual or organization or authority, which generates construction and demolition wastes. According to the Rules, the local bodies need to ensure proper management of construction and demolition wastes. State Pollution Control Board is to grant authorization for the waste processing facility and to monitor the implementation of these rules.

Types of pollution and their control measures

Pollution is the creation of contaminants into the clean environment that cause adverse transformation. It can take place in the form of noise, light, heat or energy which is a great threat to the environment and the species that exist. Let's discover the exclusive forms of pollutants and what forms the basis of pollution. The educational institutions and research organizations including industries cater to the needs of the young generation to create the awareness about the impact of pollution. Pollution free environment is one basic necessity to attain the goal.

Air pollution

Air pollution is caused due to burning of fuels, emission from the vehicles and labs that deal with burning of chemicals besides burning of wastes in open area invariably enhances air pollution in terms of smoke, liberation of carbon products, etc. Air pollution from the surrounding of the Institution can be monitored by collecting samples and analysing the same at periodic intervals. Tree species that can release higher amount of oxygen during day time such as *Neem*, *Peepal*, *Pongamia* and *Nerium* can be luxuriously grown in the campus. Tree species that are known to assimilate the carbon dioxide can be densely planted around the places of emission. Plants such as *Michelia champaka* and *Anona* species can be grown around the restroom and sewage treatment plants to suppress the unpleasant odour.

Other suitable plant species can also be identified and planted as per the diversity richness of the place where the Institution is located. If more pollutants in the air are noticed, then necessary actions can be taken with the support of Government authorities to bring down the pollutants within the limits.

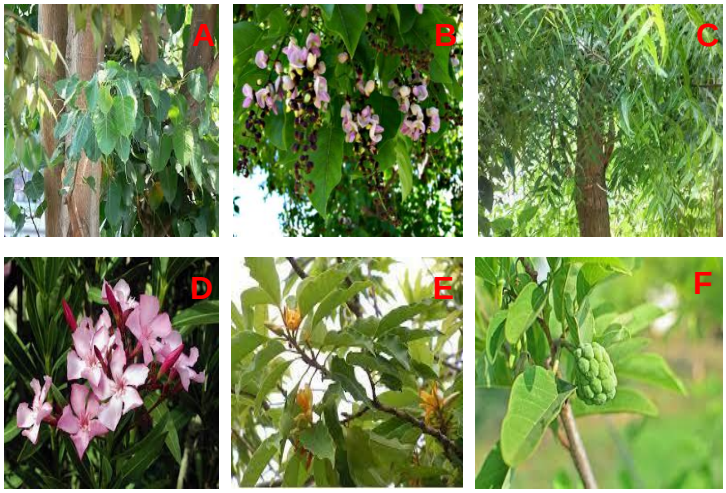

Fig.4. Plants that can sequester carbon
[A. Peepal Tree (*Ficus religiosa*), B. Pongamia Tree (*Pongamia pinnata*), C. Neem Tree (*Azadirachta indica*), D. Nerium Plant (*Nerium oleander*), E. Champak Tree (*Michelia champaka*) and F. Anona Tree (*Anona squomosa*)

Utility of public transport and low carbon emitting vehicles

Public transportation is better for the surroundings which have been proven through research on emissions. Other than this, it also gives more benefits like less noise and traffic congestion, Whenever possible, try to take the public transport in place of own vehicle. Fewer miles means approach fewer emissions (Sovacool and Brown, 2010). In order to reduce air- and noise-pollution, possible alternatives can be adopted. Walking for a short distance travel or using motorcycle whenever possible and utility of public transport and sharing rides are certain possibilities that can be adopted besides using automobiles with less emission. Work from home periodically in case administration permits. Periodical servicing the motor vehicles, using endorsed motor oil and following manufacturer's maintenance time table can limits air pollution. It may be noted that alternatively using greener motors i.e., electric cars, plug-in hybrid electric motors and gasoline vehicles reduce the pollutants to a greater extent.

Water pollution

Cleanliness of all the water storage tanks in the campus should be monitored fortnightly by the representatives and the necessary steps should be taken to clean and fill clean water for the usage. Water outlets from the canteen, toilets and laboratories should be recycled using simple/ innovative/unique methods. There should be a quantification of each of these steps to compare and understand the feasibility of doing this method. Using algae/harmless bacteria, fungi and plants species that can utilize the waste and purify the water can be used. Continuous operational conditions of sewage treatment plants should be ensured.

Fig.5. Sewage Treatment Plant

Wastewater recycling

Wastewater recyclers are important requirement in any organization and follow the proper guidelines for wastewater treatment system besides discharge standards as per Central Pollution Control Board. Main feature of these discharge standards is that the treated water should not be harmful to the biodiversity, resources and the environment. For example, a steel company coming forward to claim a green campus audit should have a proper wastewater treatment system and should follow the state and central discharge standards and ensure the safety of the treated water is free from heavy metals, toxic substances and carcinogens (Senior and Brightman, 2015).Though wastewater recycling and reuse is a choice to meet water requirements, a few factors are restricting its use together. Industrial effluents and municipal sewage waters result from numerous types of business methods and disposal practices, and can include pollutants at varying degrees that could affect the quality of water, as well as the aquatic surroundings (Senior and Brightman, 2015).

Fig.6. waste water recycling

Methods of wastewater treatment

Pre-treatment process removes all materials (trash, tree limbs, leaves, branches, plastics and other large objects) that can be easily collected from the industrial effluents/wastewaters. Primary treatment of wastewater involves sedimentation of solid waste and this process is done after filtering out larger contaminants within the water. Approximately 25 to 50% of biological oxygen demand (BOD), 50 to 70% of TSS, 65% of the oil and grease are

removed during primary treatment. Secondary treatment, aerobic biological treatment is performed in the presence of oxygen, where biological contents degraded. Around 85% of BOD and suspended solids can be removed which includes activated sludge, trickling filters and rotating biological contactors. Final treatment is performed to improve the quality of water further where the specific constituents that cannot be removed by secondary treatment can be removed in the final treatment besides complete removal of BOD. This treatment step includes sand filtration which facilitates removal of residual suspended matter; nitrogen is removed through biological oxidation while phosphorus can be removed biologically or chemically. Disinfection involves the injection of a chlorine solution to the reactor tank. Recycled water can be used for gardening purposes, etc.

Noise pollution

It is due to loud noises which could hurt the human ears. Types of noise pollutants can include explosions, jet engines and even concert events. Noise pollution is risky because it is able to cause hearing loss. Using horns in the vehicles inside the campus should be prohibited. Silent green places attract more birds; this can be used as an indicator of noise pollution and richness of biodiversity. As mentioned earlier, minimising the entry public/private motor vehicles within the campus create silent ambience which is not only minimise the air pollution, it also attract number of birds and butterflies.

Soil pollution

The campus should be litter free. Litter collection trash boxes should be placed on many places in the campus. The biodegradable and non-degradable wastes should be collected in separate trash containers. The degradable waste can be recycled in the campus and used for kitchen gardens. Bio-wastes from the labs should be collected separately and handed over to the local waste collection centres for processing.

Innovative ideas

It can be followed to reuse the non-degradable wastes such as plastic bags to grow plants, bottles to construct some attractive structures, create water fountains using waste plastics, etc. Vermicomposting practices may be carried out in the campus in which plant and kitchen waste materials may be used to prepare bioorganic manure using earthworms. It is rich in total organic nitrogen along with other micro and macro elements which may be used as biofertilizer (Dominguez *et al*., 2019).

Fig.7.Waste materials storage and composting process
A. Aeration of fertile soil, B. Dumping of wastes, C. Waste storage area, D. Earthworms for decomposing

Framing strategies on environmental targets

Targets provide verifiable evidence whether the environmental objectives are met or not. While framing the objectives, make sure that the objectives are clear and practically achievable which should render clean environment for sustenance. A couple of possible environmental objectives can be designed in line with

a) minimise the usage of raw fabrics and plastics,

b) usage of recycled products wherever feasible,

c) reduction of usage of carcinogenic chemicals,

d) abide by relevant environmental laws to keep the campus clean and ecologically fit for diverse biodiversity and

e) sustenance of environment by creating awareness among the stakeholders for the benefit of future generations.

Environmental audit characteristics and procedures

Environmental audit conducted periodically by a regulated entity which involves monitoring an organization concern whether it satisfy the environmental compliance in relation to green campus, environment, sanitation and hygiene policies. The process includes collecting, examining, evaluating, documenting data and analyzing various components related to environmental aspects as per the procedures (WGBC, 2021; Gnanamangai *et al*. 2021). Environmental audit possesses the characteristic features viz., a) identification of various sources of waste generation and its types, b) data collection on raw materials and process methods, c) identifying the area of inefficiencies in process that generate waste, d) setting up the targets for waste reduction, e) minimizing the pollution by developing internal policies, f) creating awareness among stakeholders and g) increasing process efficiency with particular reference to environmental compliance.

After mutual understanding/agreement between auditors and auditees, the audit process involved several steps. Initially, opening meeting conducted where a team of

auditors and concerned management authorities (auditees) discussed about audit procedures and document verification. Preliminary meeting was followed by on-site visit within the campus/concerned organisation along with the auditees where auditors monitor the available facility and gather the information and evidences (photography) for documentation facilities. Monitoring the components as per the environmental audit checklists (sanitation and hygiene, water conservation, waste management, green campus and environmental policies) will be carried out followed by verification of available facilities or facilities required for improvement as per the audit components listed by NSF ISO-EMS checklist. The environmental issues within the campus, strengths and weakness of the auditee's management will be scrutinised besides the risks associated with the audit. Evaluation of other issues (ecology and environment) will be studied as per checklists. Audit findings have been discussed with the members of the auditees (management authorities and staff concerned with audit) for further upkeep and preservation of environment. Finally, technical report will be prepared and distributed to the auditee; the report contains audit findings, credentials, recommendations and best practices adopted by the auditee for the records.

Benefits of environmental audit

Environmental audit provides an ample number of benefits to the concerned organization which in turn useful to maintain eco-friendly environment. It is helpful to identify the various issues related to the environment which in turn offers necessary solution to resolve the same. It provides possible provisions to conserve the natural resources and reduction of raw materials through improving production efficiencies. It governs reduction in wastes and controls the pollution. Audit promotes the corporate image and marketing opportunities since the audit concerns about the environmental impact. Over and above, it creates development of enhanced ownership behavior, superior personal skills and improved social responsibilities.

Conclusion

On whole, for better survival of organisms on the earth, it is necessary to have a viable and healthy environment. The duty of maintaining sound environment is not necessarily vested on the State and Central Governments and local legislative authorities. The responsibility has to bloom from grass-root level; each and every individual put quite a few efforts in order to maintain feasible ecological conditions. In this connection, concerned governments/local bodies designed certain policies and enacted specific rules and regulations to adopt and to attain clean development mechanism. Environmental audit is one of the tools which minimise the environmental pollution which in turn reduces the ill effects. Aims and basic requirements of systematic and periodic environmental audit have been highlighted in this article. Provided the educational institutions and allied industries satisfy the requirements in accordance with environment rules and regulation, sustenance of eco-friendly environment is not far away from our vision.

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