

## **St. Xavier's College for Women, Aluva**

### **GREEN AUDITING**

#### **Definition**

Green auditing is a means of assessing environmental performance (Welford, 2002). It is a systematic, documented, periodic, and objective review by regulated entities of facility operations and practices related to meeting environmental requirements (EPA, 2003). It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air; land and water; legal constraints; the effects on the neighbouring community; landscape and ecology; the public's perception of the operating company in the local area. Green audit does not stop all compliance with legislation. Nor is it a 'green washing' public relations exercise. Rather it is a total strategic approach to the organisation's activities (CBI, 1990).

1. Audit is a systematic approach.
2. Audit is conducted objectively.
3. Auditor obtains and evaluates evidence.
4. Evidence obtained and evaluated by the auditor concerns assertions about economic actions and events.
5. Auditor ascertains the degree of correspondence between assertions and established criteria.
6. Goal, or objective, of the audit is communicating the results to interested users.

#### **ACKNOWLEDGEMENT**

We would like to thank our Principal, Rev.Sr.Reethama for her consent to conduct this audit. We would like to sincerely thank all the Departments, students, teaching and nonteaching staff for their kind cooperation with us during this survey. We would also like to specially thank the Laboratory Assistants who helped us a lot in furnishing this information.

#### **Objectives of this green audit**

1. Verifying compliance: Verifying compliance with standards or best available techniques.
2. Identifying problems: Detecting any leakage, spills or other such problems with the operations and processes.
3. Formulating environmental policy: Formulating the organisation's environmental policy if there is no existing policy.
4. Measuring environmental impact: Measuring the environmental impact of each and every process and operation on the air, water, soil, worker health and safety and society at large.

5. Measuring performance: Measuring the environmental performance of an organisation against best practices.
7. Confirming environmental management system effectiveness: Giving an indication of the effectiveness of the system and suggestions for improvement.
8. Providing a database: Providing a database for corrective action and future plans.
9. Developing the organization's environmental strategy: Enabling management to develop its environmental strategy for moving towards a greener corporate and performance culture.
10. Communication: Communicating its environmental performance to its stakeholders through reporting will enhance the image of the company.

### **General steps**

1. Systematic and comprehensive data collection
2. Documentation with physical evidences
3. Independent periodic evaluation with regulatory requirements and appropriate standards
4. Systematic and comprehensive improvement and management of existing system

### **The audit process:**

The present audit is a Preaudit to collect the details required for external auditing.

Preaudit activities

The preaudit activities include the following:

1. The sites / area /division that are to be audited need to be determined and selected.
2. The auditee were informed of the date of the audit enabled them to adjust and become used to the concept.
3. The audit scope were identified. The auditee were consulted when establishing the scope.
4. The audit plan was designed in such a way that it accommodated changes based on information gathered during the audit and effective use of resources.
5. Audit team and assignment of responsibility were established.
6. The chosen working papers were collected. This facilitated the auditors' investigations on the sites.
- 4 | Page7. The background information on the facility including the facility' organisation, layout and processes, and the relevant regulations and standards, were collected.
8. The background information on the site's historical uses, and the location of soil and groundwater contamination were collected.
9. The preaudit questionnaire was informed to auditee (Humphrey and Hadley, (2000)).

## **Onsite audit activities**

The onsite audit includes:

1. The opening meeting is the first step between the audit team and auditee. In this meeting the purpose of audit, the procedure and the time schedule were discussed.
2. Site inspection is the second step for onsite activity. In this step the audit team discovered matters which are important to the audit but which were not identified at the planning stage.
3. Onsite phase of the audit developed a working understanding of how the facility manages the activities that influence the environment and how any EMS, if there is one, works.
4. Assessed strengths and weaknesses of the auditee's management controls and risks associated with their failure were established.
5. Gathering audit evidence ie, collecting data and information using audit protocol.
6. Communicated with the staff of the auditee to obtain most information.
7. Evaluated the audit evidence against the objectives established for the audit .
8. An exit meeting to explain the audit findings. (Humphrey and Hadley, 2000).

## **PROCEDURE FOLLOWED**

The students were divided into four groups, and under the guidance of the teaching staff of the Department of Botany, each group collected data on the assigned topics.

The assigned topics were as follows :

1. Analysis of Air Quality and Biodiversity
2. Analysis of Water quality and usage
3. Analysis of Energy consumption and costs
4. Analysis of waste generation and disposal

All the data were united and based on these, a report was formulated.

## **REPORT**

### **1. Analysis of Air quality and biodiversity**

In total, based on our data collected, there are 1372 plants in the college campus. In this, 26 plants are trees, 122 are plants of average length and 1224 are small plants. There are 210 plants in the college Botanical garden. So, 1582 plants in our college contribute to the Oxygen supply that we utilize. Being situated in the urban area, our college is exposed to various atmospheric pollutants from vehicles as well as by other external means. Based on our calculation, the different sources of carbon dioxide emitted to our college are:

1. Vehicles
2. Refrigerator

3. Air conditioners

4. Burning

5. Water coolers

### **1. Vehicles**

On the days of data collection, there were 8 cars, 7 bikes and 22 scooters in our campus, which in turn proves us that these vehicles may contribute to high carbon dioxide emission. There are 3 refrigerators, 6 air conditioners and 8 working water coolers in our campus. The students, teaching and nonteaching staff and the visitors also contribute to carbon dioxide emission. There is a ring near the dog kennel where all the food papers are collected from the classes are

burnt. Plastic wastes and papers to recycle are collected by an NGO [plan@Earth](#) for recycling.

Also, the convent has a biogas plant.

### **2. Analysis of Water quality and usage**

The college campus possesses many water outlets. Our students have counted the total number of taps, rain water harvesting plants, coolers and well. We have found that in total, there are 195 taps, 9 coolers, rain water harvesting plants worth 20,000 litres and a well. Out of these, 9 taps are leaking, a cooler in the Department of Botany is also not working.

The 9 leaking taps lead to water wastage.

### **3. Analysis of Energy consumption and costs**

The college is well equipped with electricity supply. Each department possess computers, printers, fans, plug points, tube lights, bulbs, etc. In addition to these equipment, our college also has

1. Pathological microscope
2. A distillation unit
3. Photoelectric colorimeter
4. U V Transluminator
5. 2 Autoclaves; 1 damaged
6. An exhaust fan
7. A laminar air flow
8. A hot plate
9. An incubator
10. A table fan
11. A hot air oven
12. 2 centrifuge
13. 7 filters
14. 7 telephones
15. An induction

16. A mike

17. A bell

#### **4. Analysis of Waste generation and disposal**

Wastes cannot be avoided in any environment. Wastes can be classified as Biodegradable and Non-biodegradable wastes. Biodegradable wastes include food wastes; which can be easily decomposed by the bacteria in soil. But nonbiodegradable wastes are those which cannot be degraded by any organism and remain as such for many years. Much amount of waste is generated from the college campus.

1. CANTEEN – The food waste generated from the canteen is collected and given to pigs. Plastic waste is generally less generated from the canteen. The plastic waste generated is burned inside the ring near the dog kennel. Some organic waste is used in biogas plant.

2. LIBRARY - The most generated waste is paper waste. It is taken for recycling.

3. STORE- Not much waste is generated. But the paper waste and plastic covers are burned in the ring.

4. OFFICE- Paper waste generated are recycled and reused.

5. GARDEN-Plastic and paper waste is comparatively less.

6. AUDITORIUM -The wastes are collected after each programme and are burned in the ring.

7. BATHROOM-The wastes are collected and burned in an incinerator behind the convent.

8. CLASSROOMS-Paper Wastes are collected in the waste basket and recycled.

8 LABORATORY-The broken glass wastes and the useless instruments are disposed for recycling after thorough washing.

10. COLLEGE PREMISES-Plastic waste generated is usually less. But paper waste is generated in a larger amount.

#### **OBSERVATIONS**

1. On analyzing the air quality, we could assess that there are many pollutants in our environment (either in micro quantities or macro quantities), from the vehicles of the road. The burning of wastes, especially plastic waste, also causes emission of poisonous gases into the atmosphere. But, there are many plants in our campus that purify the polluted air and supply enough oxygen for us.

2. Likewise, there are sufficient water outlets for the students and water coolers for the departments. But it is essential to check whether all these are working or not and whether the taps are leaking or not.

3. Energy consumption is yet another component that is to be taken care of. A few numbers of fans and tube lights are not working. An autoclave and a cooler are also not working.

4. Waste generated is mostly burned inside the ring near dog kennel. Organic waste is sometimes put in biogas plant and sometimes fed to pigs. Fortunately, the nonteaching staff of the college is available to clean the college.

## **SUGGESTIONS**

### **a. Air Quality**

More plants need to be planted. More of shade trees to be planted inside the college campus.

Plastic wastes should not be burned that leads to pollution. Instead they could be given to organizations like PLAN @ EARTH on a monthly basis.

### **b. Water Quality**

Taps needed to be repaired. The water coolers which are not working need to be repaired immediately.

### **c. Energy Consumption**

Energy consumption could be reduced. Unnecessary lights and fans could be switched off. During daylight, lights can be switched off. Energy conserving methods like usage of LED and CFL bulbs can be appreciated.

- Separate baskets should be there for biodegradable and nonbiodegradable wastes.
- Vermicomposting plant and biogas plant should be actively working.
- Agencies or individuals should be available to transport wastes from the college premises.

## **CONCLUSION**

We, the Department of Botany, believe that we have successfully completed the analysis of various environmental components. We hope that the suggestions put forward by us would be considered by the college and implemented as soon as possible.

### **Postaudit activities (to be conducted)**

Postaudit activities begin with the preparation of a draft report. The draft report should be reviewed by the facility personnel directly involved in the audit. The final report should be derived from it and it should then be distributed to all interested parties within the organisation. Humphrey and Hadley (2000) confirm that it is important for management to followup the report and develop an action plan to implement those audit findings.