



ENVIRONMENT AUDIT REPORT FOR BHASKARACHARYA COLLEGE OF APPLIED SCIENCES



Elion Technologies & Consulting Private Limited

307, 3rd Floor, DDA Lal Market, H-Block

Vikas Puri, New Delhi-110018



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Acknowledgement

Elion Technologies and Consulting Pvt Ltd thanks the management of Bhaskaracharya College of Applied Sciences (University of Delhi) for assigning this important work of Environmental Audit. We appreciate the co-operation to our team for completion of study.

For giving us necessary inputs to carry out this very vital exercise of Environment Audit. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.



Site Information

Name of College	Bhaskaracharya College of Applied Sciences University of Delhi
College Address	Sector-2, phase1, Dwarka, New Delhi- 110075
Execution Partner	ELION Technologies & Consulting Pvt Ltd
Communication Address	307, 3rd Floor DDA Lal Market H-Block Vikas Puri, New Delhi-110018
Date of Audit	28 th April 2023
Year of Audit	2022 - 2023
Audit Participants	Dr. Gunjan Sirohi (Assistant Professor) Dr. Amit Kumar (Assistant Professor)
Total College Area	39408.03 sqm
Total Green Area	28381.26 sqm



Concept

The term 'Environmental audit' means differently to different people. Terms like 'assessment', 'survey' and 'review' are also used to describe similar activities. Furthermore, some organizations believe that an 'environmental audit' addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Environmental Audit, many leading companies/ institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).

The ICC defines Environmental Auditing as:

"A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects."

The European Commission, in its proposed regulation on environmental auditing, has also adopted the ICC definition of Environmental Audit.



Introduction

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues.

Environmental Management Systems (EMS) is very popular in the industrial sector, but the general belief is that EMS is something pertaining to industries only. Other parts of the world have started adopting compatible environmental management systems either voluntarily or for promoting standards by external certification. International environmental standards do not suit the existing Indian educational system.

A very simple indigenized system has been devised to monitor the environmental performance of educational institutions. It comes with a series of questions to be answered on a regular basis. Environmental conditions may be monitored from angles that are relevant to Indian requirements, without stress on legal issues or compliance. This innovative scheme is user- friendly and totally voluntary. The environmental monitoring system helps the institution to set environmental examples for the community and to educate young learners. It can be adapted to urban and / or rural situations.



Overview of Campus

Bhaskaracharya College of Applied Sciences named after a great mathematician of 12th Century was set up in October, 1995. The college is a constituent college of University of Delhi and is 100% funded by Government of National Territory of Delhi.

The main goal of the institution is to train students in various self-oriented professional courses like Computer Science, Electronics, Instrumentation and Food Technology.

Within a short span of time, our college has achieved remarkable recognition as one of the few excellent institutions in Delhi. The college is housed in a spacious new building sprawled over ten acres at Sector 2, Dwarka, New Delhi. The new college campus has twelve departments out of which ten departments have 3 laboratories each.

In addition to this there is a Conference Room, an Audio-Visual Hall and Library spanning three separate floors, an open-Air Theatre and indoor and outdoor sports facility. In addition to classroom lectures, the course curriculum also includes seminars, industrial tour, project training, etc.

The project training helps in experiencing the working culture in the industry whereas the seminars provide firsthand information and an opportunity to interact with the eminent personalities of industries.

List of courses offered by the institute:

Following are the list of undergraduate courses offered by the institute-

- B.Sc. (Hons.) Biomedical Science
- B.Sc. (Hons.) Botany
- B.Sc. (Hons.) Computer Science
- B.Sc. (Hons.) Chemistry
- B.Sc. (Hons.) Electronics
- B.Sc. (Hons.) Food Technology
- B.Sc. (Hons.) Instrumentation
- B.Sc. (Hons.) Microbiology
- B.Sc. (Hons.) Physics
- B.Sc. (Hons.) Polymer Science
- B.Sc. (Hons.) Zoology



Audit Objectives

The broad aims/ benefits of the eco-auditing system would be –

- Environmental education through systematic environmental management approach.
- Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Reduction in resource use.
- Financial savings through a reduction in resource use.
- Curriculum enrichment through practical experience.
- Development of ownership, personal and social responsibility for the college campus and its environment.
- Enhancement of university profile.
- Developing an environmental ethic and value systems in young people



Executive Summary

An environmental audit is a snapshot in time, in which one assesses campus performance in complying with applicable environmental laws and regulations. Though a helpful benchmark, the audit almost immediately becomes outdated unless there is some mechanism in place to continue the effort of monitoring environmental compliance.

This is second environmental audit of campus for NACC affiliation; QS Program and doing their bid towards environmental protection and environmental awareness at local and global front. Audit criterion is environmental cognizance, waste minimization and management, biodiversity conservation, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during audit. This audit report contains observations and recommendations for improvement of environmental consciousness.



Environmental Audit - Questionnaire

The areas of eco/environmental/green auditing to be followed/practiced by participating institutions:

- I. Waste Minimization and Recycling
- II. Greening
- III. Energy Conservation
- IV. Water Conservation
- V. Clean Air
- VI. Animal Welfare
- VII. Environmental Legislative
- VIII. General Practices

Is any Environmental Audit conducted earlier?

Yes, Last Environment Audit was conducted in 2021.

What is the total permanent population of the Campus?

	Male	Female	Total
Students	866	435	1301
Teachers	37	52	89
Non-Teaching Staff	66	11	77
Sub Total	969	498	1467
Approximate Number of Visitors (Per day)			15-20
What is the total number of working days of your campus in a year?			295

Where is the campus located?

The campus is Located at Sector-2, phase1, Dwarka, New Delhi- 110075.



Which of the following are available in your campus?

1	Garden area	Yes
2	Playground	Yes
3	Kitchen	Yes
4	Toilets	Yes
5	Garbage Or Waste Store Yard	Yes
6	Laboratory	Yes
7	Canteen	Yes
8	Hostel Facility (Numbers)	No
9	Guest House	No

Which of the following are found near your campus?

1	Municipal dump yard	No
2	Garbage heap	No
3	Public convenience	Yes
4	Sewer line	Yes
5	Stagnant water	No
6	Open drainage	No
7	Industry – (Mention the type)	No
8	Bus / Railway station	Yes (Palam Bus Stand)
9	Market / Shopping complex / Public halls	Yes (near 300m)



I - WASTE MINIMIZATION AND RECYCLING

1.	Does your campus generate any waste? If so, what are they?	Yes. Paper waste, E-waste and Hazardous Waste from campus and kitchen waste from canteen and pantry.
2.	What is the approximate amount of waste generated per day? (in Kilograms/month) (approx.)	10Kg/Day
3.	How is the waste generated in the campus managed? By 1 Composting 2 Recycling 3 Reusing 4 Others(specify)	<ul style="list-style-type: none"> Waste such as tree leaves, grass and other kitchen waste is composted in compost pit. For paper waste a MOU signed with JAGRITI for recycling of paper.
4.	Do you use recycled paper in campus?	Yes
5.	Do you use reused paper in campus?	Yes
6.	How would you spread the message of recycling to others in the community? Have you taken any initiatives? If yes, please specify.	Yes, various awareness programmes have been conducted by the campus.
7.	Can you achieve zero garbage in your campus? If yes, how?	No, but trying to minimize the garbage.



II – GREENING THE CAMPUS

1.	Is there a garden in your campus?	Yes
2.	Do students spend time in the garden?	Yes
3.	Total number of Plants in Campus	550-600
4.	Provide some names of trees and plants in the campus.	Banyan Tree, Amaltas, Ashoka, Mango, Neem, Devil's tree.
5.	Is the university campus have any Horticulture Department?	No, but a Garden Committee is present to regulate and monitor the matter related to Nursery and Greenery. Full time gardener is also appointed in the campus.
	If yes, number of Staff working in Horticulture Department?	4
6.	Number of Tree Plantation Drives organized by institute per annum. (If Any)	Around 8 – 10 drives at various event.
7.	Number of Trees Planted in Last year.	146
	Survival Rate	96%
8.	Plant Distribution Program for Students and Community	Yes
9.	Plant Ownership Program	Yes, 1-2 annually



III – ENERGY

1.	List down ways that you use energy in your campus. (Electricity, LPG, firewood, others). Using this list, try to think of ways that you could use less energy every day.	<ol style="list-style-type: none"> 1. Electricity Supply from Distribution board. 2. Solar Energy from Solar Power Plant. 3. DG Set. 4. LPG gas in canteen and Labs.
2.	Are there any energy saving methods, equipments, techniques employed in your campus? If yes, please specify. If no, suggest some	<ol style="list-style-type: none"> 1. Solar Power Plant of 30KW. 2. Replacement of old and faulty fluorescent light with LED lights.
3.	Give an estimate of number of lights installed in your campus along with numbers?	2000 Lights
4.	Are any alternative energy sources employed/ installed in your campus? (Photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,) Specify.	Solar Power Plant
5.	Do you run "switch off" drills at campus?	Yes
6.	Are your computers and other equipment's put-on power-saving mode?	Yes
7.	Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?	Yes, for 2-3 hours.



IV - WATER CONSERVATION

1.	List all the uses of water in your campus?	<ol style="list-style-type: none"> 1. Drinking Purpose. 2. Sanitary Purpose. 3. Gardening. 																		
2.	How does your campus store water? (Mention tanks with capacity) Are there any water saving techniques followed in your campus?	<ul style="list-style-type: none"> • 22 overhead tanks of capacity 2000L. • 3 underground tanks <ol style="list-style-type: none"> 1. 10000L for Drinking purpose. 2. 20000L for Sanitary purpose. 3. 20000L for Fire Pump 																		
3.	If there is water wastage, specify why and how can the wastage be prevented/ stopped?	No wastage as such.																		
4.	Locate the point of entry of water and point of exit of waste water in your campus. Entry- Exit-	Entry – Connection line from Jal Board Exit – Drainage																		
5.	Write down few ways that could reduce the amount of water used in your campus?	<ol style="list-style-type: none"> 1. Use of water efficient taps. 2. Use of dual flushing system in washrooms. 																		
6.	Record water use from the campus water meter for six months (record at the same time of each day). At the end of the period, compile a table to show how many litres of water have been used.	<table border="1"> <thead> <tr> <th>S. No.</th> <th>Month</th> <th>Consumed Units</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Jan-22</td> <td>802</td> </tr> <tr> <td>2</td> <td>Feb-22</td> <td>1518</td> </tr> <tr> <td>3</td> <td>Mar-22</td> <td>1304</td> </tr> <tr> <td>4</td> <td>Apr-22</td> <td>826</td> </tr> <tr> <td>5</td> <td>May-22</td> <td>1212</td> </tr> </tbody> </table>	S. No.	Month	Consumed Units	1	Jan-22	802	2	Feb-22	1518	3	Mar-22	1304	4	Apr-22	826	5	May-22	1212
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		6	Jun-22	1248
		7	Jul-22	1168
		8	Sep-22	1900
		9	Nov-22	1867
		10	Feb-23	2136
7.	Does your campus harvest rain water? (Please explain the method and uses)	Yes, Rainwater harvesting pits are available in the campus.		
8.	Is there any water recycling System.	No water recycling system.		

V - CLEAN AIR

1.	Are the Rooms in Campus are Well Ventilated?	Yes				
2.	Number of windows per room (aggregate value to be provided)	Average 4 windows per room.				
3.	What is the ownership of the vehicles used by your institute? (Please Tick ✓ only one)	No				
		Operator-owned vehicles				
		Institute-owned vehicles				
		A combination of campus-owned and operator-owned vehicles				
4.	Provide details of institute-owned motorized vehicles?	Buses	Cars	Vans	Other	Total
	No. of vehicles	-	-	-	-	-
	No. of vehicles more than five years old	-	-	-	-	-
	No. of Air-conditioned vehicles	-	-	-	-	-
	PUC done	-	-	-	-	-
5.	Specify the type of fuel used by your institute's vehicles:	Buses	Cars	Vans	Other	
	Diesel	-	-	-	-	
	Petrol	-	-	-	-	



	CNG	-	-	-	-
	LPG	-	-	-	-
	Electric	-	-	-	-
6.	Air Quality Monitoring Program (If Any)	No			
7.	Students suffer from respiratory ailments? (If Any)	No			
8.	Details of Diesel/Gas Generator. (Rating & make)	80KVA DG set is available.			

VI – ANIMAL WELFARE

1.	List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.) (if any)	Cats, Birds, Squirrels, Insects etc.
2.	How many dogs in your area have undergone Animal Birth Control - Anti Rabies (ABC - AR)?	NA
3.	Does your campus have a Biodiversity Programme or a KARUNA CLUB?	ECO CLUB is created for the biodiversity programmes.

VII - ENVIRONMENTAL LEGISLATIVE COMPLIANCE

1.	Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
2.	Does your campus have any rules to protect the environment? List possible rules you could include.	Yes
3.	Dose Environmental Ambient Air Quality Monitoring conducted by the Campus?	No



4.	Dose Environmental Water and Wastewater Quality monitoring conducted by the Campus?	No
5.	Dose stack monitoring of DG sets conducted by the Campus?	No
6.	Is any warning notice, letter issued by state government bodies?	No
7.	Dose any Hazardous waste generated by the Campus? If yes explain its category and disposal method.	Yes, waste from Chemistry labs and Biomolecular labs are generated. Steps of disposal – 1. generation 2. Storage 3. Neutralization 4. Autoclaving
8.	Dose any Bio medical waste generated by the Campus? If yes explain its category and disposal method.	No

VIII - GENERAL

1.	Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
2.	Does your campus have any rules to protect the environment? List possible rules you could include.	Yes
3.	What is the housekeeping schedule of garden and common areas in your campus?	Daily cleaning, twice a Day.
4.	Are students and faculties aware of environmental cleanliness ways? If Yes Explain	Yes



5.	Does Important Days Like World Environment Day, Earth Day, and Ozone Day etc. celebrated in your Campus?	Yes, Environment Day, Yoga Day and Tree plantation etc. are celebrated.
6.	Does Campus participate in National and Local Environmental Protection Movement?	Yes, Yamuna Bachao Mission
7.	Does Campus have any Recognition/certification for environment friendliness?	Yes, various certificates are awarded.
8.	Does Campus use renewable energy?	Yes, Solar Energy.
9.	Does Institution conduct a green/environmental audit of its campus?	Yes
10.	Has the institution been audited/ accredited by any other agency such as NABL, NABET, TQPM, NAAC etc.?	Yes, college has NAAC accreditation



Recommendations

- Stack monitoring of the DG set shall be carried out.
- Air quality monitoring program shall be done in the Campus.
- Campus should use water efficient taps and dual flushing system in washrooms.



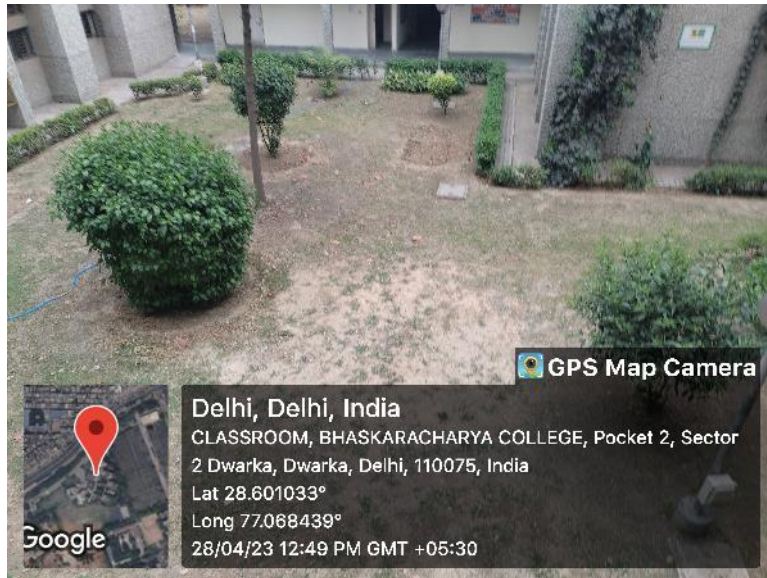
Photographic Evidences



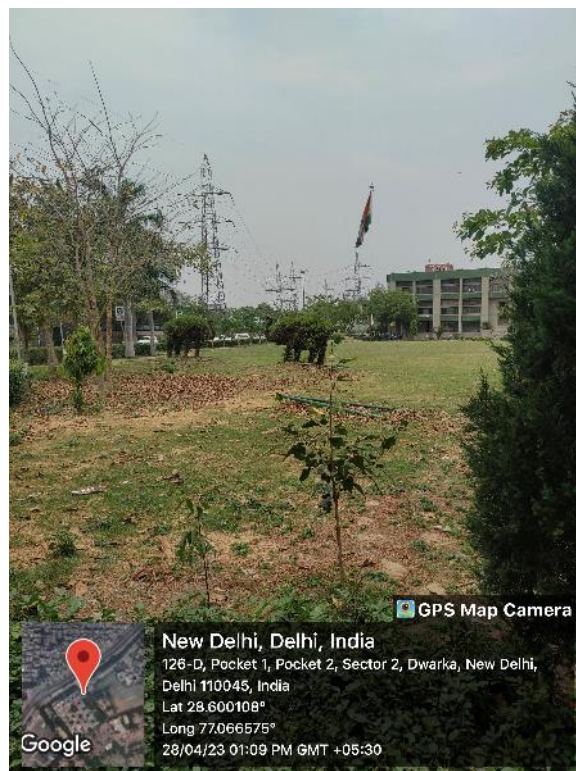
College Main Entrance



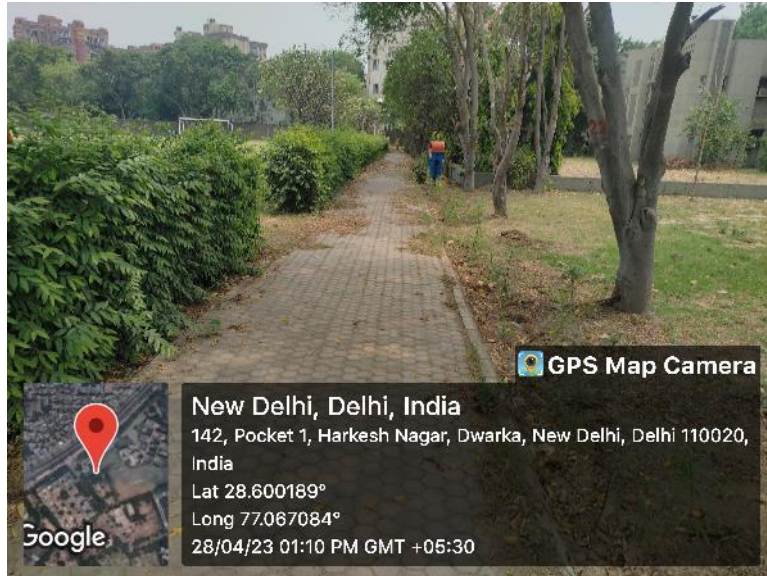
Trees at the Entrance



Garden Area



Lawn Area



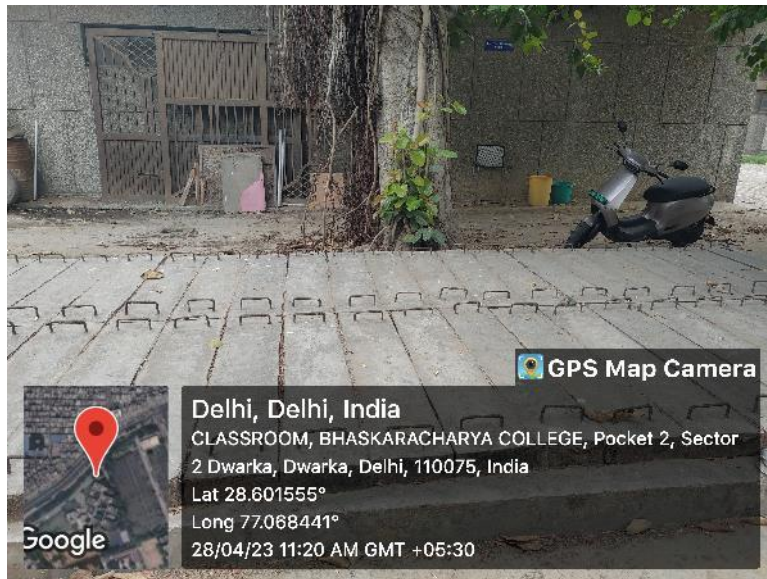
Trees and Plants



Nursery



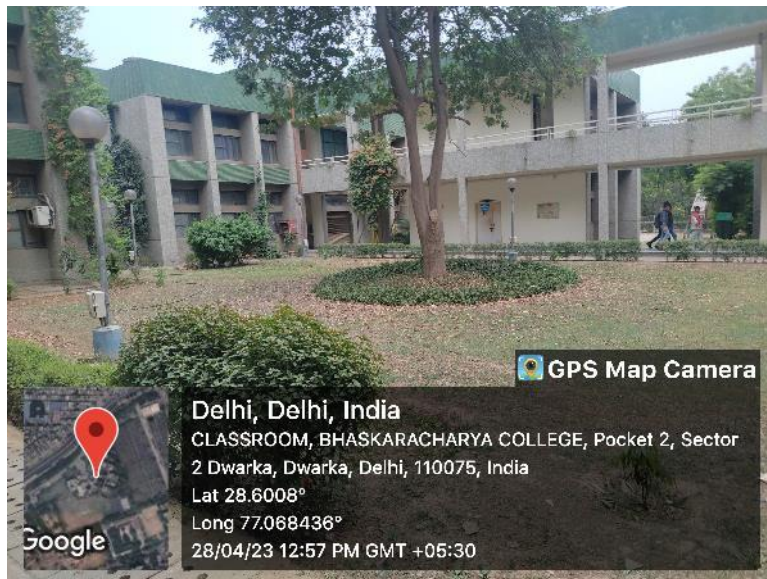
Underground Water Tank



Rain Water Harvesting Tank



Vermicompost Pit



Trees and Lawn area in college



Ramps available at different locations



Trees outside the college area



Solar Power Plant



Paper Recycling Machine



Conclusion

This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to Environmental aspects. Overall, 72% of university campus is for landscaping. The audit has identified several observations for making the campus premise more environmentally friendly. The recommendations are also mentioned with observations for university campus team to initiate actions.

The audit team opines that the overall site is maintained well from environmental perspective. There are no major observations but recommendation is made in this report which would further strengthen the goal to achieve 100% environment friendly campus.



References

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle
- Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Water [Prevention & Control of Pollution] Cess Act-1977 (Amended 2003) and Rules- 1978
- The Air [Prevention & Control of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices

End of Report



Elion Technologies & Consulting Private Limited

Registered Office:

307, 3rd Floor, DDA Lal Market, H-Block

VikasPuri, New Delhi-110018

Phone No: 011-28541888,9013890526

Email: support@elion.co.in

Website: www.elion.co.in

DISCLAIMER

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