

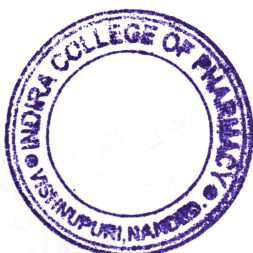



7.1.3

Quality Audits on Environment and Energy Regularly Undertaken by the Institution.

**The Institutional Environment and Energy Initiatives are confirmed through the
Following.**

- 1. Green Audit / Environment Audit**
- 2. Energy Audit**
- 3. Clean and Green Campus Initiatives**
- 4. Beyond the Campus Environmental Promotional Activities**




Principal
Indira College of Pharmacy
Vishnupuri, Nanded-06.



Sahayog Sevakbavi Sanstha's

INDIRA COLLEGE OF PHARMACY


Sahayog Educational Campus, Vishnupuri, Nanded-431606

(Approved by PCI, AICTE, New Delhi, Recognized by Govt. of Maharashtra & Affiliated to SRTMU, Nanded.)

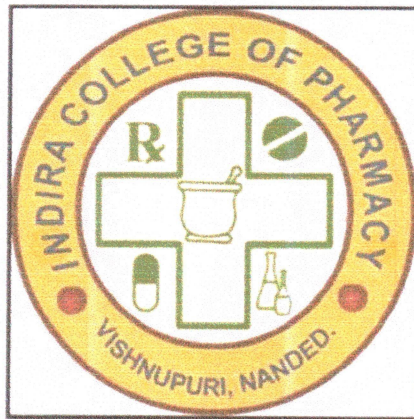


1. Green Audit / Environment Audit




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GREEN AUDIT REPORT
of
Sahayog Sevabhavi Sanstha's,
INDIRA COLLEGE OF PHARMACY,
Sahayog Educational Campus, Vishnupuri, Nanded

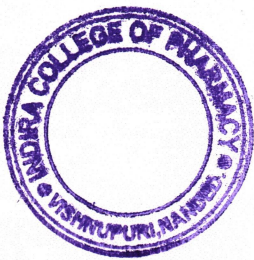



Year: 2021-22


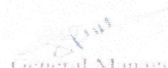
Prepared by:

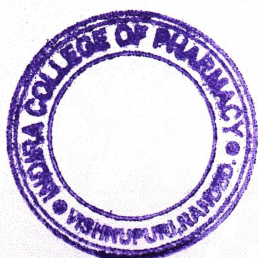
ENGRESS SERVICES


Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411009
Phone: 09890444795, Email: engress123@gmail.com




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MAHARASHTRA ENERGY DEVELOPMENT AGENCY	
	
Maharashtra Energy Development Agency (Government of Maharashtra Institution) Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra-411067 Ph No: 020-35000450 Email: eee@mahaurja.com, Web: www.mahaurja.com	
ECN/2022-23/CR-43/1709	10 th May, 2022
CERTIFICATE OF REGISTRATION FOR CLASS 'A'	
We hereby certify that, the firm having following particulars is registered with MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA) under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.	
Name and Address of the firm	M's Engress Services Yashshree, 26, Nirmal Bag Society, Near Muktagan English School, Parvati, Pune - 411 009
Registration Category	<i>Empanelled Consultant for Energy Conservation Programme for Class - A</i>
Registration Number	MEDA/ECN/2022-23/Class A/EA-32.
<ul style="list-style-type: none">• Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.• MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.• This empanelment is valid till 09th May, 2024 from the date of registration, to carry out energy audits under the Energy Conservation Programme.• The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.	
 General Manager (EC)	




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ENGRESS SERVICES

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Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/ SSSICOP /21-22/02

Date: 12/5/2022

CERTIFICATE

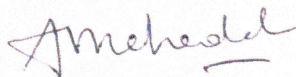
This is to certify that we have conducted Green Audit at Sahayog Sevabhavi Sanstha's Indira College of Pharmacy, Nanded in the Year 2021-22.

The College has adopted following Energy Efficient and Green Practices:


- Usage of Energy Efficient LED Fittings
- Installation of 25 kWp Capacity Roof Top Solar PV Plant
- Segregation of Waste at Source
- In process installation of Bio gas Plant for conversion of Bio degradable Waste
- Usage of Liquid Waste for Gardening purpose
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp, dedicated wash room & Wheel Chair for Divyangajan

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,



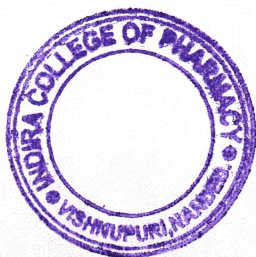
A Y Mehendale,
Certified Energy Auditor,
EA-8192




Principal
Indira College of Pharmacy
Vishnupuri, Nanded-43.

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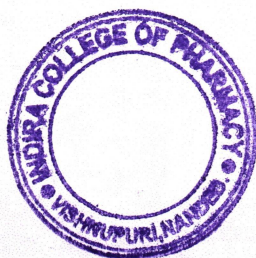




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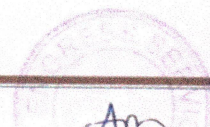
ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Sahayog Sevabhavi Sanstha's Indira College of Pharmacy, Nanded for awarding us the assignment of Green Audit of their Nanded Campus for the Academic Year: 2021-22.

We are thankful to all Staff members for helping us during the field study.




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EXECUTIVE SUMMARY

1. Sahayog Sevabhavi Sanstha's Indira College of Pharmacy, Nanded consumes Energy in the form of **Electrical Energy**; used for various gadgets, office & other facilities.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	53386	48.05
2	Maximum	9181	8.26
3	Minimum	766	0.69
4	Average	4449	4.00

3. Energy Conservation projects already installed:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Installation of **25 kWp** Solar PV Plant

4. Usage of Renewable Energy:

- The College has installed a Roof Top Solar PV Plant of Capacity **25 kWp**.
- The Energy Generated by Roof Top Solar PV Plant in 21-22 is **30000 kWh**.
- The reduction in Annual CO₂ Emission in 21-22 is **27 MT**.

5. Waste Management:

5.1 Segregation of Waste at Source:

The solid waste is segregated at source. There are separate bins for collection at various points and is disposed of for further action.

5.2 Organic Waste Management:

The College is in process of installation of Bio Gas Plant for conversion of Bio degradable Waste.

5.3 Liquid Waste Management:

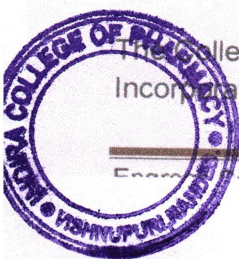
Liquid waste from the canteen & the wash rooms is collected and is recycled using four bed filtration method and is used for watering the garden.

5.4 Hazardous chemicals and radioactive waste Management:

Due care is taken that all containers are properly labelled and that materials are contained in an appropriate container.

5.5 E Waste Management:

The college authorities have entered in to a Memorandum of Understanding with M/s Pacific Incorporation Nanded for disposal of E Waste.



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6. Rain Water Management:

The Rain Water falling on the terrace as well as free flowing water is collected in an underground water tank and is further used for gardening purpose.

7. Green & Sustainable Practices:

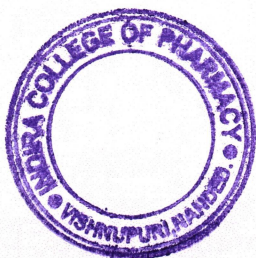
- Good Internal Road
- Medicinal Plant Garden
- Provision of Ramp & Wheel Chair for Divyangajan
- Creation of Awareness on Resource Conservation, by Display of Posters


8. Assumptions:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere
- Average Energy generated by 1 kWp Solar PV Plant : 4 kWh/Day
- Annual Solar Energy Generation Days: 300 Nos

9. References:

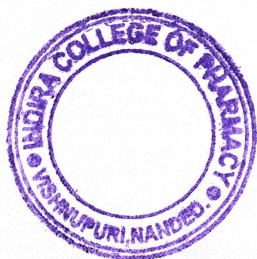
- For CO₂ Emissions: www.tatapower.com
- For Roof Top Solar Energy Generation: www.solarrooftop.gov.in





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Vishnupuri, Nanded-43.
Below the signature is a faint circular stamp.

ABBREVIATIONS

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
kWp	Kilo Watt Peak
Kg	Kilo Gram
MT	Metric Ton
CO ₂	Carbon Di Oxide
LPD	Liters per Day
SSS	Sahayog Sevabhavi Sanstha




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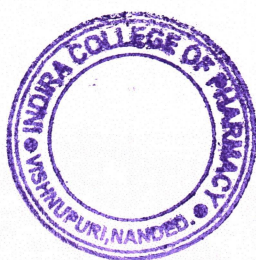
CHAPTER-I INTRODUCTION


1.1 Objectives:

1. To study present Energy Consumption
2. To Study CO₂ emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Management
6. Study of Green & Sustainable Practices

1.2 Table No 1: General Details of the College:

No	Head	Particulars
1	Name of the Institution	Sahayog Sevabhavi Sanstha's Indira College of Pharmacy
2	Address	Vishnupuri, Nanded, 431 606
3	Year of Establishment	2009
4	Affiliation	Swami Ramanand Teerth Marathwada University, Nanded




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Indira College of Pharmacy
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CHAPTER-II

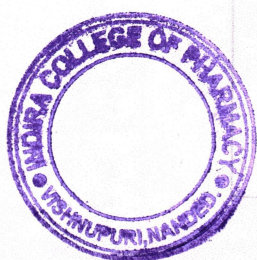
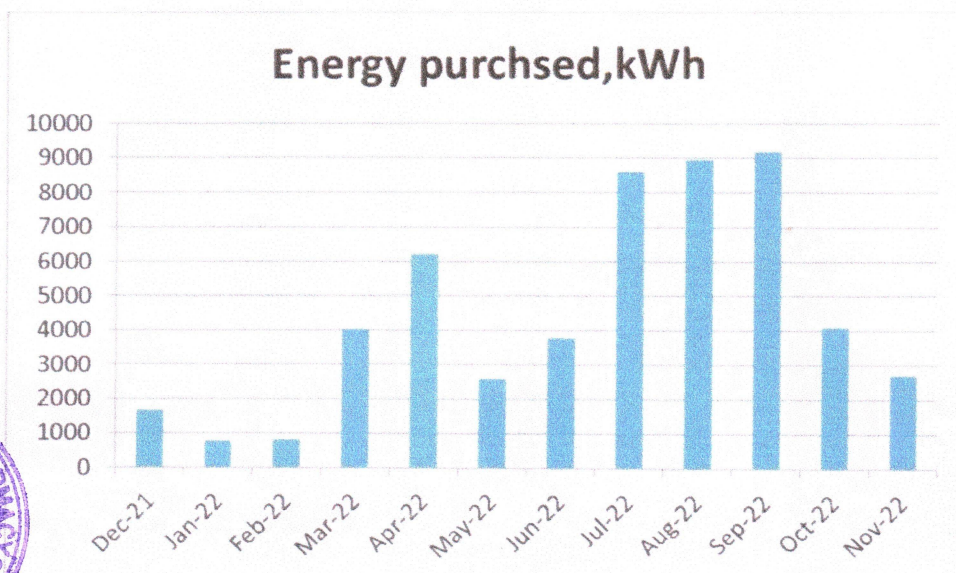
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Energy Consumption.

Table No 2: Study of Electrical Energy Consumption: 21-22:

No	Month	Energy Purchased, kWh
1	Dec-21	1673.1
2	Jan-22	765.7
3	Feb-22	809.9
4	Mar-22	4016.35
5	Apr-22	6210.1
6	May-22	2590.9
7	Jun-22	3784.95
8	Jul-22	8612.5
9	Aug-22	8943.35
10	Sep-22	9181.25
11	Oct-22	4100.85
12	Nov-22	2696.85
13	Total	53386
14	Maximum	9181
15	Minimum	766
16	Average	4449

Chart No 1: To study the variation of Monthly Electrical Energy Consumption:




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Table No 3: Important Parameters:

No	Parameter/ Variation	Energy Purchased, kWh
1	Total	53386
2	Maximum	9181
3	Minimum	766
4	Average	4449




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CHAPTER-III

STUDY OF CO₂ EMISSION

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities

The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO₂ Emissions:

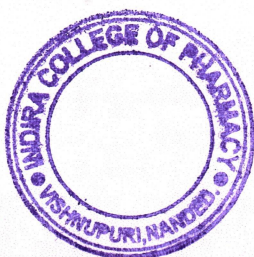
The basis of Calculation for CO₂ emissions due to Electrical Energy is as under

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Dec-21	1673.1	1.51
2	Jan-22	765.7	0.69
3	Feb-22	809.9	0.73
4	Mar-22	4016.35	3.61
5	Apr-22	6210.1	5.59
6	May-22	2590.9	2.33
7	Jun-22	3784.95	3.41
8	Jul-22	8612.5	7.75
9	Aug-22	8943.35	8.05
10	Sep-22	9181.25	8.26
11	Oct-22	4100.85	3.69
12	Nov-22	2696.85	2.43
13	Total	53386	48.05
14	Maximum	9181	8.26
15	Minimum	766	0.69
16	Average	4449	4.00



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Chart No 2: Representation of Month wise CO₂ Emissions:

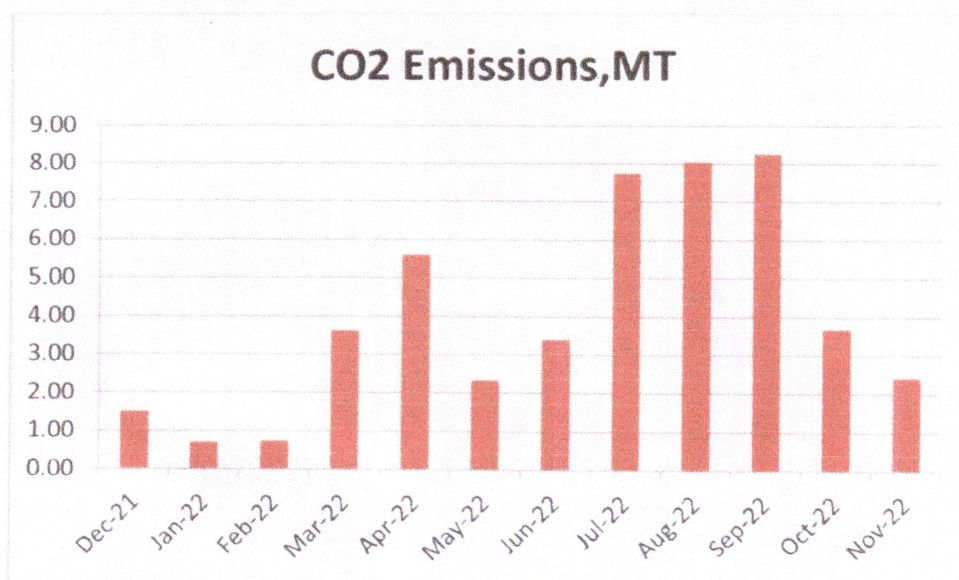
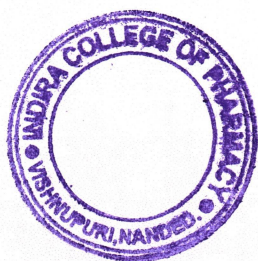



Table No 5: Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	533856	48.05
2	Maximum	9181	8.26
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4	Average	4449	4.00




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CHAPTER-IV

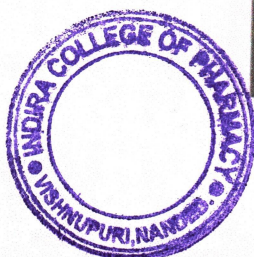
STUDY OF USAGE OF RENEWABLE ENERGY


The College has installed a 25 kWp capacity Roof top Solar PV Plant. We compute the Reduction in Annual CO₂ Emission.

Table No 6: Computation of Reduction in Annual CO₂ Emission:

No	Particulars	Value	Unit
1	Roof Plant Solar PV Plant Capacity	25	kWp
2	Average Daily Energy Generated by Plant	4	kWh
3	Annual Generation Days	300	Nos
4	Annual Energy Generated = 1*2*3	30000	kWh
5	1 kWh of Electrical Energy emits	0.9	Kg of CO ₂
6	Reduction in CO ₂ emission by Solar PV Plant = (4) * (5)	27	MT/Annum

Photograph of Roof Top Solar PV Plant:




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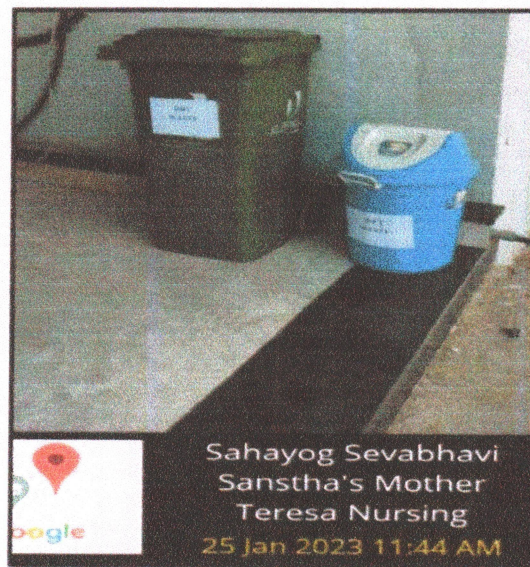
CHAPTER V

STUDY OF WASTE MANAGEMENT

5.1 Segregation of Waste at Source:

The solid waste is segregated at source. There are separate bins for collection at various points and is disposed of for further action.

Photograph of Waste Collection Bins:



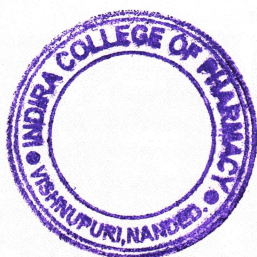
5.2 Organic Waste Management:

The College is in process of installation of Bio Gas Plant for conversion of Bio degradable Waste.

5.3 Liquid Waste Management:

Liquid waste from the canteen & the wash rooms is collected and is recycled using four bed filtration method and is used for watering the garden.

Photograph of Underground Water Storage Tank:



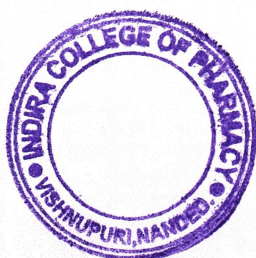
la
Principal
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Vishnupuri, Nanded-06.


5.4 Hazardous chemicals and radioactive waste Management:

Due care is taken that all containers are properly labelled and that materials are contained in an appropriate container.

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The College authorities have entered in to a Memorandum of Understanding with M/s Pacific Incorporation Nanded for disposal of E Waste.



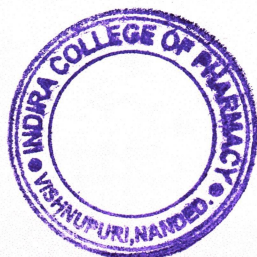
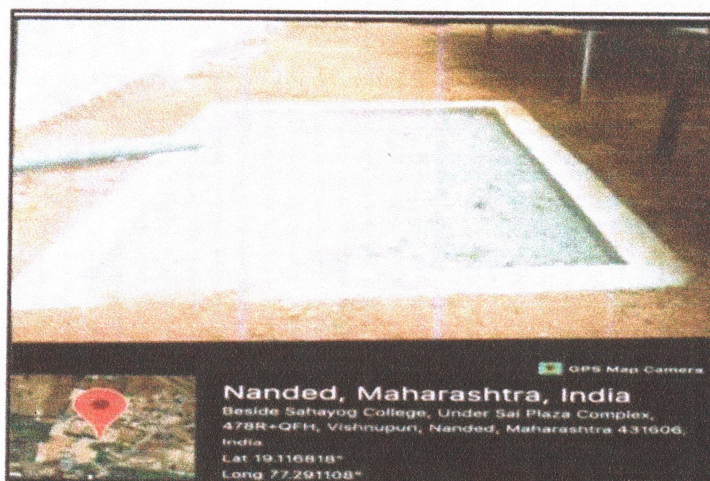

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CHAPTER-VI

STUDY OF RAIN WATER MANAGEMENT

The Rain Water falling on the terrace as well as free flowing water is collected in an underground water tank and is further used for gardening purpose.

Photograph of Rain Water Storage Tank:




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Vishnupuri, Nanded-06.

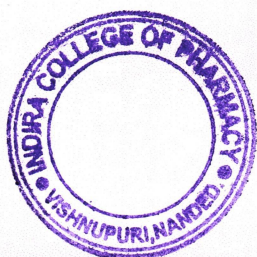
CHAPTER-VII

STUDY OF GREEN AND SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Road & Internal Tree Plantation:

The College has well maintained internal road to facilitate the easy movement of the students within the campus and also Medicinal Plant Garden.

Photograph of internal road & Tree Plantation in the campus:

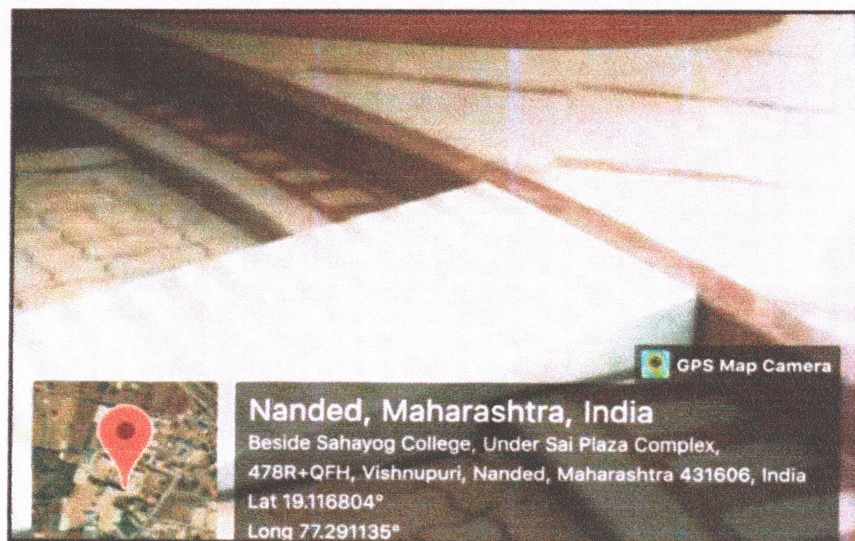


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7.2 Provision of Ramp for Divyangajan:

The College has made provision for Ramp for easy movement of Divyangajan. Also dedicated wash room and wheel chair are made available.

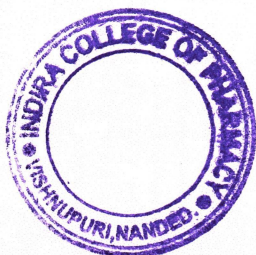
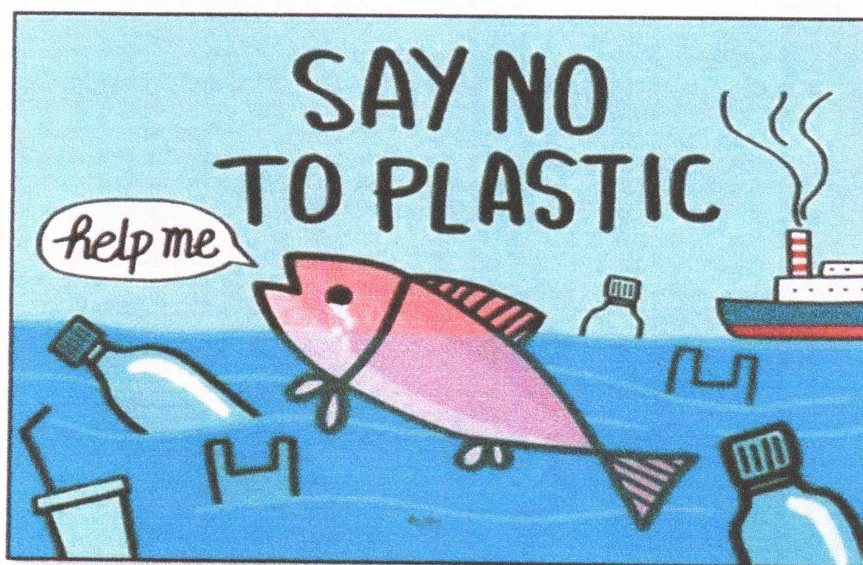
Photograph of Ramp:




7.3 Creation of Awareness on Plastic Ban:

The College has displayed Poster emphasizing the ban on Single Use Plastic.

Photograph of Poster on Plastic Ban:

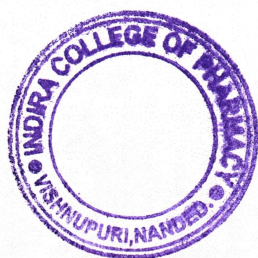




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ANNEXURE-I

LIST OF TREES & PLANTS IN THE CAMPUS

No	Common Name of Plant
1	Neem
2	Gokarna
3	Mango
4	Patharchathi
5	Papaya
6	Amla
7	Rose
8	Zendu
9	Jasmine
10	Peepal
11	Curry Leaves
12	Ajwain
13	Vinca
14	Hibiscus
15	Aloevera
16	Jambhul
17	Tamrind
18	Mogra
19	Ashwagandha
20	Nishigandha
21	Mint
22	Marva
23	Corriender



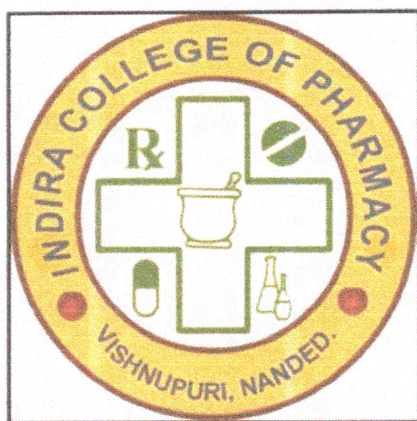

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ENVIRONMENTAL AUDIT REPORT

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Sahayog Sevabhavi Sanstha's,
INDIRA COLLEGE OF PHARMACY,

Sahayog Educational Campus, Vishnupuri, Nanded



Year: 2021-22

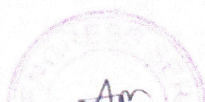





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Prepared by


ENGRESS SERVICES

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MAHARASHTRA ENERGY DEVELOPMENT AGENCY	
	
Maharashtra Energy Development Agency (Government of Maharashtra Institution) Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067 Ph No: 020-35000450 Email: eeo@mahaurja.com , Web: www.mahaurja.com	
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Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/SSSICOP/21-22/03

Date: 12/5/2022

CERTIFICATE

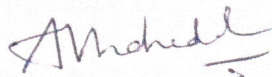
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The College has adopted following Environment Friendly Practices:

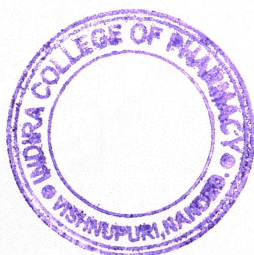
- Usage of Energy Efficient LED Fittings
- Installation of 25 kWp Capacity Roof Top Solar PV Plant
- Segregation of Waste at Source
- In process installation of Bio gas Plant for conversion of Bio degradable Waste
- Usage of Liquid Waste for Gardening purpose
- Internal Tree Plantation
- Provision of Ramp for Divyangajan


We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,



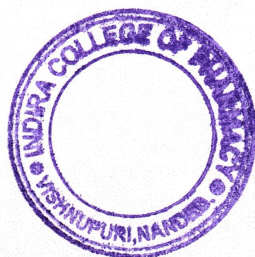
A Y Mehendale,
Certified Energy Auditor,
EA-8192

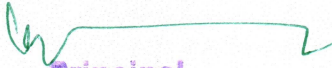



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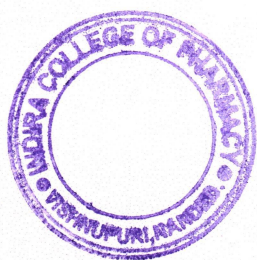




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ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Sahayog Sevabhavi Sanstha's Indira College of Pharmacy, Nanded, for awarding us the assignment of Environmental Audit of their Nanded campus for the Year: 2021-22.

We are thankful to all Staff members for helping us during the field study.




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EXECUTIVE SUMMARY

1. Sahayog Sevabhavi Sanstha's Indira College of Pharmacy, Nanded consumes Energy in the form of **Electrical Energy**; used for various gadgets, office & other facilities.

2. Pollution caused due to College Activities:

- **Air pollution:** Mainly CO₂ on account of Electricity & LPG Consumption.
- **Solid Waste:** Bio degradable Waste, Garden Waste, Recyclable Waste and Human Waste.
- **Liquid Waste:** Human liquid Waste.

3. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Electrical Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	53386	48.05
2	Maximum	9181.	8.26
3	Minimum	766	0.69
4	Average	4449	4.00

4. Various projects implemented for Environmental Conservation:

- Installation of 25 kWp Roof Top Solar PV Plant.
- Usage of Liquid Waste for gardening purpose

5. Usage of Renewable Energy & Reduction in CO₂ Emission:

- The College has installed Roof Top Solar PV Plant of Capacity **25 kWp**
- The Electrical Energy generated in 21-22 is **30000 kWh**.
- Reduction in CO₂ Emissions in 2021-22 works out to be **27 MT**.

6. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	100	67	78
2	Minimum	80	49	60

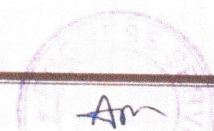
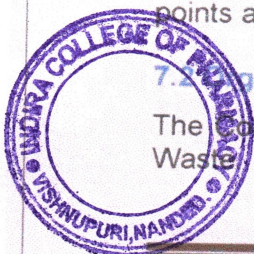
7. Waste Management:

7.1 Segregation of Waste at Source:

The solid waste is segregated at source. There are separate bins for collection at various points and is disposed of for further action.

7.2 Organic Waste Management:

The College is in process of installation of Bio Gas Plant for conversion of Bio degradable Waste



7.3 Liquid Waste Management:

Liquid waste from the canteen & the wash rooms is collected and is recycled using four bed filtration method and is used for watering the garden.

7.4 Hazardous chemicals and radioactive waste Management:

Due care is taken that all containers are properly labelled and that materials are contained in an appropriate container.

7.5 E Waste Management:

The College authorities have entered in to a Memorandum of Understanding with M/s Pacific Incorporation Nanded for disposal of E Waste.

8. Rain Water Harvesting:

The Rain Water falling on the terrace as well as free flowing water is collected in an underground water tank and is further used for gardening purpose.

9. Environmental Friendly Initiatives:

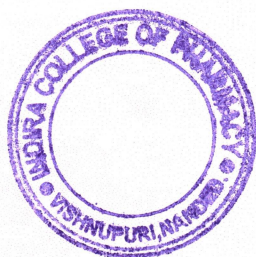
- Internal Tree Plantation
- Creation of Awareness by Display of Posters on Plastic Ban.


10. Assumptions:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere
- Average Energy generated by 1 kWp Solar PV Plant : 4 kWh/Day
- Annual Solar Energy Generation Days: 300 Nos

11. References:

- For CO₂ Emissions: www.tatapower.com
- For Roof Top Solar Energy Generation: www.solarrooftop.gov.in
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI & Water Quality Standards: www.cpcb.com





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ABBREVIATIONS

SSS	: Sahayog Sevabhavi Sanstha
MSEDCL	: Maharashtra State Distribution Company Limited
MT	: Metric Ton
kWh	: kilo-Watt Hour
KLPD	: Kilo Litres per Day
LED	: Light Emitting Diode
AQI	: Air Quality Index
PM-2.5	: Particulate Matter of Size 2.5 Micron
PM-10	: Particulate Matter of Size 10 Micron
CPCB	: Central Pollution Control Board




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CHAPTER-I INTRODUCTION

1.1 Important Definitions:

1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are complied with and adequate care has been taken towards environmental protection and preservation

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment"

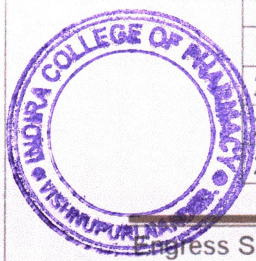
1.1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

1.1.4. Relevant Environmental Laws in India: Table No-1:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

1.1.5. Some Important Environmental Rules in India: Table No-2:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Siting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules



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2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

1.1.6 National Environmental Plans & Policy Documents: Table No-3:

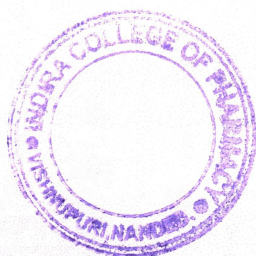
1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research College)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10.	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

1.2 Audit Methodology:

1. To study Resource Consumption & CO₂ Emissions
2. To Study CO₂ Emission Reduction
3. To study Indoor Air Quality Parameters
4. To Study Waste Management
5. To Study Rain Water Harvesting
6. To Study Environment Friendly Initiatives

1.3 General Details of College: Table No: 4

No	Head	Particulars
1	Name of the Institution	Sahayog Sevabhavi Sanstha's Indira College of Pharmacy
2	Address	Vishnupuri, Nanded, 431 606
3	Year of Establishment	2009
4	Affiliation	Swami Ramanand Teerth Marathwada University, Nanded



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CHAPTER-II

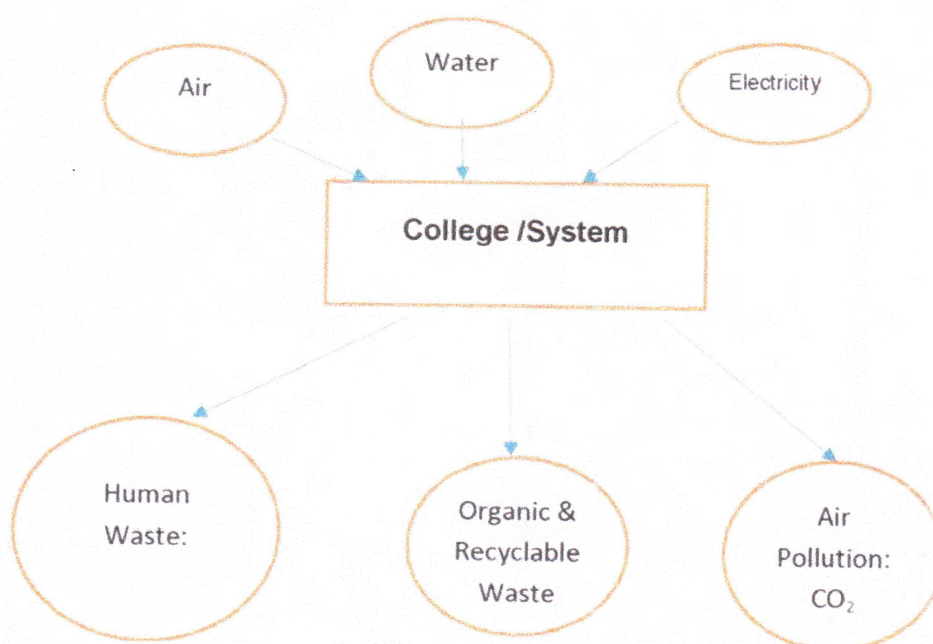
STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The College consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

Chart No 1: Representation of College as System:

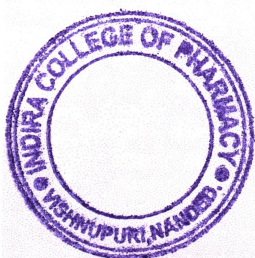



Now we compute the Generation of CO₂ on account of consumption of Electrical Energy. The basis of Calculation for CO₂ emissions due to Electrical Energy is as under

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Table No 5: Study of Consumption of Energy & CO₂ Emissions: 21-22:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Dec-21	1673.1	1.51
2	Jan-22	765.7	0.69
3	Feb-22	809.9	0.73
4	Mar-22	4016.35	3.61
5	Apr-22	6210.1	5.59
6	May-22	2590.9	2.33




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7	Jun-22	3784.95	3.41
8	Jul-22	8612.5	7.75
9	Aug-22	8943.35	8.05
10	Sep-22	9181.25	8.26
11	Oct-22	4100.85	3.69
12	Nov-22	2696.85	2.43
13	Total	53386	48.05
14	Maximum	9181	8.26
15	Minimum	766	0.69
16	Average	4449	4.00

Chart No 2: Study of CO₂ Emission:

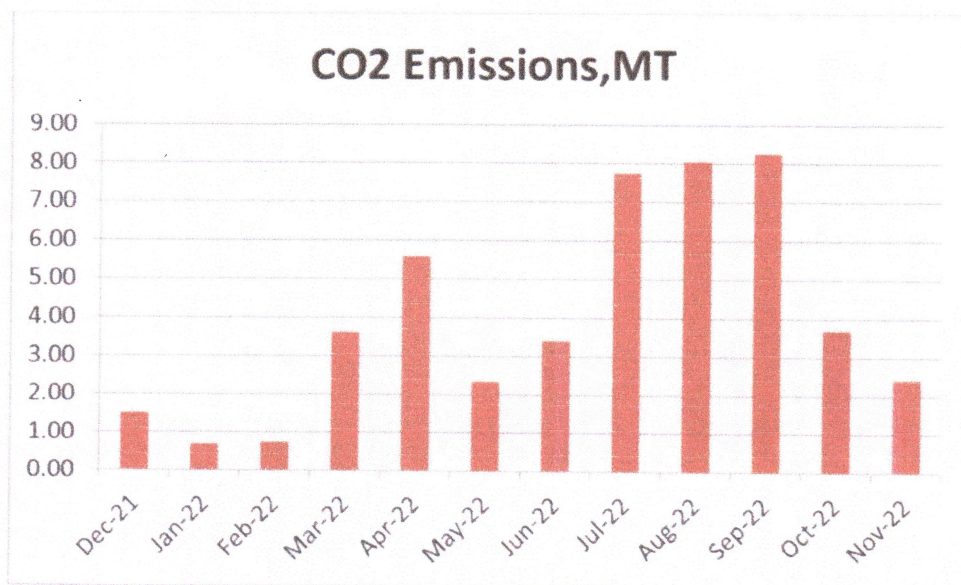
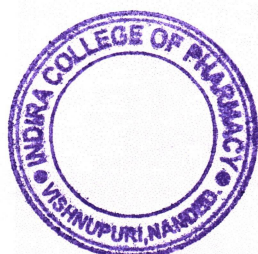


Table No 6: Various Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	533856	48.05
2	Maximum	9181	8.26
3	Minimum	766	0.69
4	Average	4449	4.00



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CHAPTER IV STUDY OF CO₂EMISSION REDUCTION

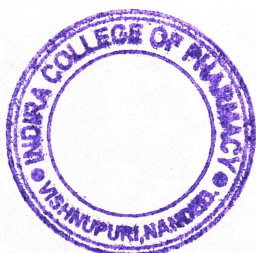
The College has installed Roof Top Solar PV Plant of Capacity 25 kWp.


In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 7: Computation of Annual Reduction in CO₂ Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	25	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	30000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO ₂ Saved by Solar PV Plant $= (4) \times (5) / 1000$	27	MT of CO ₂

Photograph of Roof Top Solar PV Plant:




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CHAPTER IV STUDY OF INDOOR AIR QUALITY

4.1 Importance of Air Quality:

Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about **14,000 litres** of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's liveability.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

Air quality is a measure of the suitability of air for breathing by people, plants and animals.

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 'air pollution' has been defined as **'the presence in the atmosphere of any air pollutant.'**

As per Section 2(a) of Air (Prevention and control of pollution) Act, 1981 'air pollutant' has been defined as **'any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment'**

4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects. The measurement of the AQI requires an **air monitor** and an **air pollutant** concentration over a specified **averaging period**.

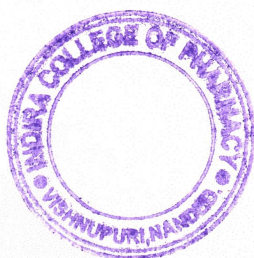
We present herewith following important Parameters.


1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10micron

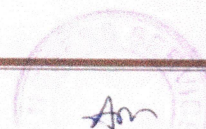
Table No 8: Indoor Air Quality Parameters:

No	Location	AQI	PM-2.5	PM-10
1	Office	93	55	68
2	Pharmaceutical Chemistry Lab	80	49	60
3	Pharmaceutics Lab	98	58	74

4	Class Room-1	90	51	63
5	Class Room-2	99	60	67
6	Quality Assurance Lab	100	67	78
7	Medicinal Plant Lab	93	53	71
	Maximum	100	67	78
	Minimum	80	49	60




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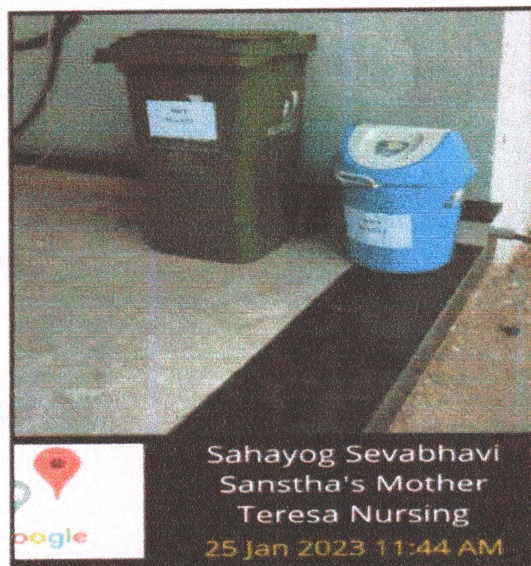


CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Segregation of Waste at Source:

The solid waste is segregated at source. There are separate bins for collection at various points and is disposed of for further action.

Photograph of Waste Collection Bins:



5.2 Organic Waste Management:


The College is in process of installation of Bio Gas Plant for conversion of Bio degradable Waste.

5.3 Liquid Waste Management:

Liquid waste from the canteen & the wash rooms is collected and is recycled using four bed filtration method and is used for watering the garden.

Photograph of Underground Water Storage Tank:




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5.4 Hazardous chemicals and radioactive waste Management:

Due care is taken that all containers are properly labelled and that materials are contained in an appropriate container.

5.5 E Waste Management:

The College authorities have entered in to a Memorandum of Understanding with M/s Pacific Incorporation Nanded for disposal of E Waste.



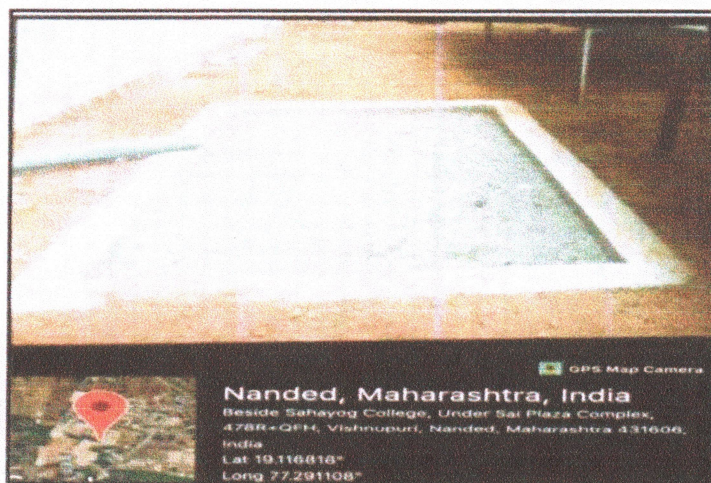

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CHAPTER-VI

STUDY OF RAIN WATER MANAGEMENT

The Rain Water falling on the terrace as well as free flowing water is collected in an underground water tank and is further used for gardening purpose.

Photograph of Rain Water Storage Tank:




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CHAPTER-VII

STUDY OF ENVIRONMENTAL FRIENDLY PRACTICES

7.1 Internal Tree Plantation:

The College has internal Tree Plantation.

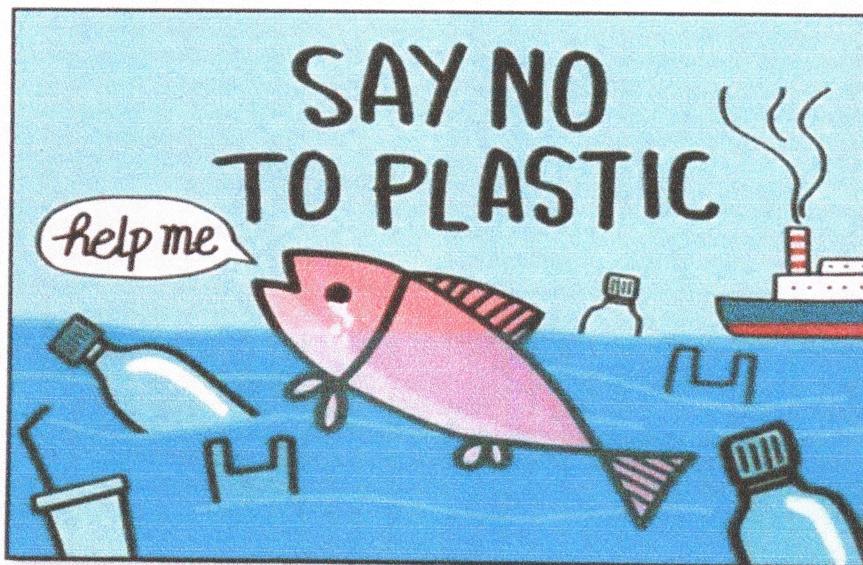
Photograph of Internal Tree Plantation:




7.2 Creation of Awareness on Plastic Ban:

The College has displayed Poster emphasizing the ban on Single Use Plastic.

Photograph of Poster on Plastic Ban:




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ANNEXURE-I:

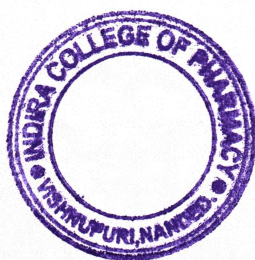
INDOOR AIR QUALITY & WATER QUALITY STANDARDS:


1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

2. Recommended Water Quality Standards:

No	Designated Best Use	Criteria
1	Drinking Water Source without conventional Treatment but after disinfection	pH between 6.5 to 8.5 Dissolved Oxygen 6 mg/l or more
2	Drinking water source after conventional treatment and disinfection	pH between 6 to 9 Dissolved Oxygen 4 mg/l or more
3	Outdoor Bathing (Organized)	pH between 6.5 to 8.5 Dissolved Oxygen 5 mg/l or more
4	Controlled Waste Disposal	pH between 6 to 8.5




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