A Campus Environmental & Energy Audit Report (2023-2024) of Nanded Pharmacy College, Nanded, Maharashtra

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Contents

Environmental & Energy Audit (Green Audit) is an examination of measures taken by an institute to prevent the harm may be caused to the environment by the institutional activities

Introduction:

Colleges and Universities have a wide impact on the surroundings. Colleges also play a unique role in pursuing environmentally sustainable solutions. Nanded Pharmacy College has taken a number of positive steps to reduce the adverse environmental impact. This report serves to highlight the institutional efforts for maintaining the environmental integrity. The report was prepared by Dr. Anupkumar T Sharma, Asst. Professor, Dept. of Pharmaceutics under the supervision of Dr. N B Ghiware, Principal, Nanded Pharmacy College, Nanded. with the help of External and Internal Environmental Green Audit Assessment Team.

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of green impact on campus. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO_2 from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

Objectives:

In recent time, the Environmental and Energy Audit of an institution has become essential for self-assessment of the institution. The college has been putting efforts to keep our environment clean since its inception. The report presents the findings of an environmental audit conducted at NPC. The purpose of this audit was to assess the college's environmental performance, identify areas of improvement, and provide

recommendations for sustainable practices. The audit covered various aspects, including energy consumption, waste management, and water usage. The main objectives of carrying out the Audit are:

- To identify the Geographical Location of the college
- To document the botanical and animal life variance of the college
- To record the atmospheric specifications of Nanded where college is situated
- To document the ambient environmental conditions of weather, air, water and noise of the college
- To document the waste disposal system of the college
- To estimate the energy consumption in the college

Methodology:

The purpose of the Environmental and Energy Audit of NPC is to ensure that the activities performed in the campus are in accordance with the Green Policy of the country.

The methodology includes:

- Collection of data
- Physical inspection of the campus
- Observation and review of the documentation
- Data analysis

Introduction of the College:

Nanded Pharmacy College, one of the prestigious and oldest institution of Nanded, was established by **Shri Sharda Bhavan Education Society in 1996.** Shri Sharda Bhavan Education Society (SSBES) was established in the year 1950 under Societies Registration Act BOM XXIX 1950. The Society is registered under Society Registration Act BOM XXIX 1950 dated 13 Sept, 1963. Reg. No: F-42.

Lt. Dr. Shri. Shankarrao Bhaurao Chavan (Ex. Home Minister of India), founder President of Shri Sharda Bhavan Education, Society, Nanded envisioned to uplift the poor and needy people of society with quality education. His dream was to dispel the darkness from the lives of poor by enlightening with education. Shri. Shankarraoji Chavan would think that poor and intelligent students of Marathwada region should get quality education in Nanded to explore the careers in medical and engineering. His mission was to develop ethical and virtuous students to serve the society. His moto was to enhance the scientific vision among the students.

The College is affiliated with Swami Ramanand Teerth Marathwada University, Nanded, Maharashtra since its inception. The College courses are approved by All India Council for Technical Education, New Delhi and Pharmacy Council of India, New Delhi. This is the first Pharmacy College of Nanded. The college is also ISO 9001-2015 Certified.

In the year 2023-24, the institute has received grant of Rs. 95,000 for research work through Minor Research Project and Rs.35,500 for NSS activities from NSS Department, SRTM University, Nanded.

The College runs NSS project which includes about 250 students since 2019. The NSS of the College organizes various programmes for Social Services in various fields like blood donation, plantation, cleanliness etc. Approximately a total of more than 50 volunteers are enrolled in NSS in the College each academic year. The College has been ranked consistently within first 05 Pharmacy colleges of the SRTM University.

Nanded Pharmacy College runs B. Pharm. and M. Pharm. courses. The College has Ph. D Research Centre and every year many Research Scholars are engaged in the research work at the Centre. Number of Graduates, Post Graduates and Ph. D Scholars have passed out from this college and are at present successfully employed on high profile jobs in the country making their alma mater proud of them.

Mission, Vision & Values:

Mission: Education is Enlightenment.

Vision:

- To be a leading Pharmacy Institute in the region
- To be recognized nationally for excellence & innovation in education & student's success
- To get engaged in institute-institute, institute-industry partnerships.
- To be involved in education system that enhances economic development & improved quality of life

Values:

Commitment to Students:

Belief in providing quality, accessible in instruction, resources, and support services to enhance the growth and development of students

Commitment to Faculty & Staff:

Belief in importance of providing a work and learning environment characterized by integrity, clear communications, open exchange of ideas, involvement in decision making, and respect for all individuals

Commitment to Community:

Belief in enhancing the economic vitality and quality of life for all citizens of the community

Commitment to Excellence:

Belief in the pursuit of excellence in all college programs and services

Environmental Audit (Green Campus Audit):

The college has adopted the 'Green Campus' system for environmental conservation and sustainability. The college has a goal of achieving three targets, i.e., to attain zero environmental foot print, positive impact on health and performance of staff and students and to spread environmental literacy among the students and staff. The goal is to reduce CO_2 emission, energy and water use, while creating atmosphere where students can learn and be healthy.

Land Use Investigation, NPC, Nanded (As on 27-06-2024):

The Land Use Conception:

The land use concept for NPC focuses on optimizing space, functionality, and sustainability. By incorporating proposed developments, efficient land use strategies, and sustainable infrastructure, the college can create a campus that supports academic excellence, student well-being, and environmental stewardship. It is crucial for the college administration, planners, and stakeholders to collaborate in implementing this land use concept, ensuring a vibrant and sustainable future for NPC.

Remote sensing and Geographic Information System (GIS) techniques provide an advanced land use mapping and planning. GIS is a powerful technology that integrates geographic data, spatial analysis, and visualization capabilities, enabling users to gather, manage, analyse, and present geospatial information.

Methodology Adopted for Land Use Mapping:

Google map, field survey data and Google earth data have been used in this study. Land use map of the study area have been prepared using the above three types of data.

Data Processing and Analysis:

Land use map preparation is executed through the following steps:

Acquisition of data (Location: 19°10'33" N 77°18'30" E), Geo-coding and Geo referencing of satellite imageries by extracting the ground control points. The data collected during field visit and the GIS data and Google map data were corelated and compared.

The land use for NPC, Nanded, with a view to detect the land consumption in the built-up land area using both remote sensing and GIS techniques.

Geographical Location with Campus Map in Scale:

The college has a **vast pollution-free campus spread over 02 acres** of land in the middle of Nanded. Nanded is known for the industries for processing cotton, oilseeds, and sugar. Nanded is situated on the banks

of River Godavari and well-known for the Gurudwara, Guru Gobind Bagh Amusement and Kaleshwar Temple.

Scaled image of college campus is shown in Photo 1. Green color in Map is representing green area. The Google aerial views of College Campus have been shown in Photo 2 and 3 respectively which are showing entire view of premises and green land landscape of the institute.

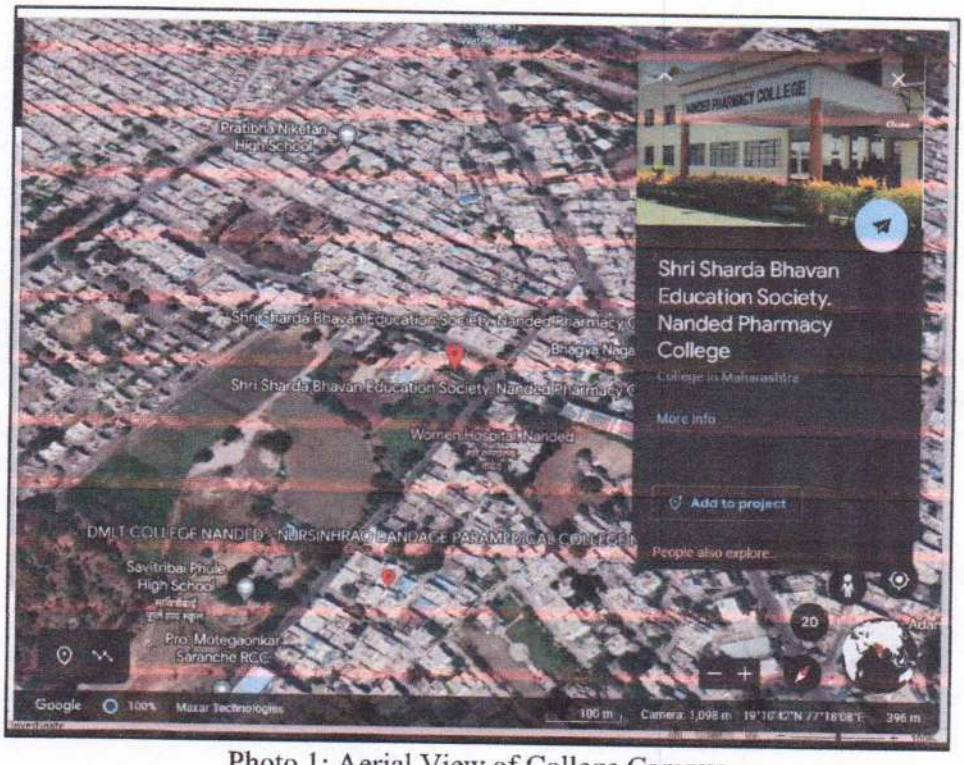


Photo 1: Aerial View of College Campus
(Source: GoogleEarth)

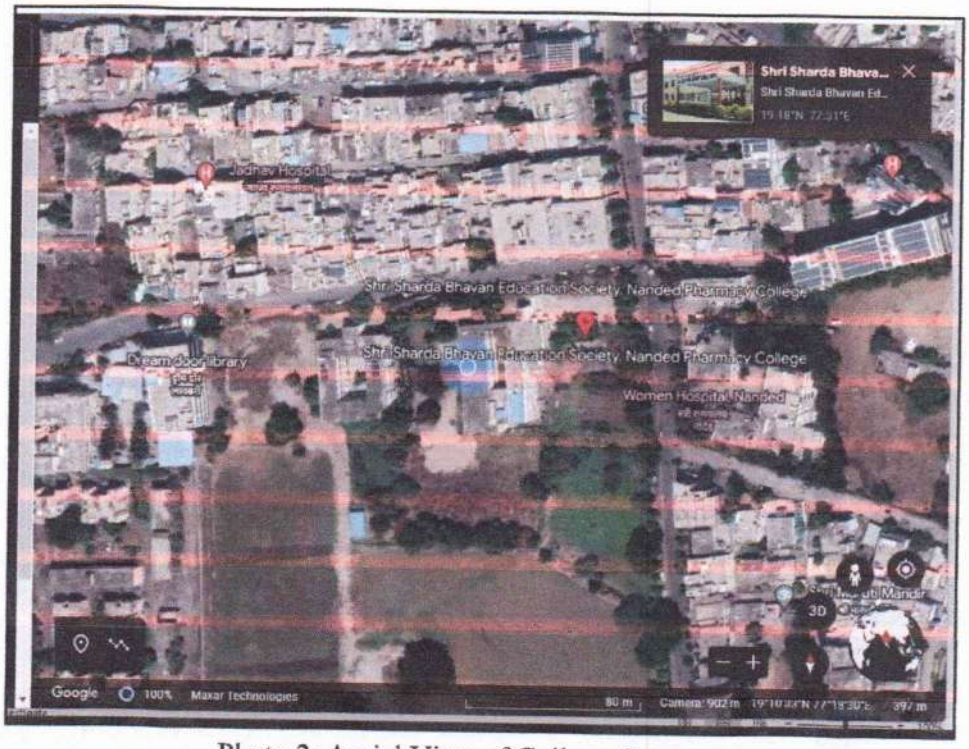


Photo 2: Aerial View of College Campus
(Source: Google Earth)

Photo 3: Location of College
(Source: Google Map)

Land Use Data of NPC, Nanded, Maharashtra:

Table 1: Land Use of NPC

Categories of Land Use	Area (m^2)
Plantation area	Approx. 5261
Built up area (Includes Roads)	Approx. 2833
Total Area	8094

Land Use (Built Up Area) Analysis:

The built-up area of 35% (i.e., 2833 m^2) consists of the following regions as stated below for land consumption in built up area of NPC:

- Administrative
- Instructional area
- Student's Facility & Amenities Area
- Circulation Area

Table 2: Administrative Area

Sr. No.	Name of Infrastructure	Required (Sq.mts.)	Available (Sq.mts.)
01	Principal's Chamber	30	30
02	Board/Meeting Room	20	20
03	Office: Establishment /Academic/ Confidential room/ Exam Control/ Stationary Store	60x2	150
04	HOD Cabins	20 x 4	80
05	Faculty Room	10 x n	Available adjoining HOD cabin
06	Security Room	--	10
07	Placement Office	-	30

Table 3: Instructional Area*

Sr. No.	Name of Infrastructure	Required (Sq. mts.)	Available (Sq. mts)
01	Class Room 1,2, 3	Min 75 x3	75 x2, 130x1 Total: 280
02	Tutorial Room	33x1	33
03	Laboratory		
	Pharmaceutics	75-90	120•
	Pharmaceutics Lab+ Machine Room	75-90	120•
	Pharmaceutical Chemistry	75-90	120•
	Pharmaceutical Analysis	75-90	100•
	HAP &Pharmacology	75-90	120•
	Pharmacognosy	75-90	100•
	Microbiology/Biotechnology	75-90	100#
	Pharmacology Lab (PG)	75-90	70
04	Central Instrument Room	80	80
05	Store Room (1+2 {for inflammable])	100+20	120
06	Animal House	80	100
07	Library including reading room	150	270
08	Computer Centre	75	80
09	Seminar Hall	--	150

*For 40 intake of B. Pharm. & 15 intake of M. Pharm. Pharmacology; #including preparation room

Table 4: Student's Facility & Amenities Area

Sr. No.	Name of Infrastructure	Required (Sq. mts)	Available (Sq. mts)
01	Girls Common Room	60	75
02	Boy's Common Room	60	75
03	Toilet Blocks for Girls	24	24
04	Toilet Blocks for Gents	24	50
05	Canteen/Cafeteria	100	150
06	First Aid cum seek room	--	20
07	Auditorium/Amphitheatre	250-300 seating capacity	Open to Air Theatron is available approx. 290 sq. mts
08	Drinking Water facility	-	Available
09	Girls Hostel (Desirable)	9-20sq.mts/room	Common Girls Hostel of Management is bordering to college
11	Parking area for staff & students	--	Adequate

Table 5: Circulation Area

Sr. No.	Name of Infrastructure	Required (Sq.mts.)	Available (Sq.mts.)
01	Corridors	--	300
02	Other Area	--	140
03	Other Common Area		42

Outcomes:

NPC, which was established in the year 1996, has an eco-friendly environment. It has a long inheritance of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 65% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.

The Land Use Analysis Report is prepared by Dr. A T Sharma, Asst. Professor, Department of Pharmaceutics, NPC, Nanded under the supervision of Dr. N B Ghiware, Principal, NPC, Nanded

Botanical Variance at NPC, Nanded, Maharashtra:

NPC is within the geo-position between latitude 19°10'33" N and longitude 77°18'30" E in Nanded, Maharashtra, India. It encompasses an area of about 02 Acres. The area has many varieties of tree species with different characteristics. Most of the plants are planted in different periods of time through various plantation programs organized by the college and have become an integral part of the college. The trees of the college have increased the quality of life, not only of the college students and staff members but also of the people around of the college in terms of contributing to the environment by providing oxygen, improving air quality, climate betterment, conservation of water, preserving soil, and supporting birds and insects, controlling excessive summer heats. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favorite of birds and many insects. Leaf - covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength hand appearance of the different trees provides a glorious and beautiful appearance to the institute. A long row of palm and coconut trees at the entrance of the college gives a magnificent look to the institute. The trees have found to be bringing down noise and cut down dust and storms. Palm trees are flexible, have fewer branches, and can often withstand heavy winds. This means palm trees are resilient. The following are the tree species which adorn the entire environment of the institute-

Table 6: List of tree species of NPC, Nanded, Maharashtra

Sr. No.	Botanical Name	Family	Common Name	Total
1.	*Saraca asoca*	Fabaceae	Ashoka	17
2.	*Tectona grandis*	Lamiaceae	Sagwan	16
3.	*Terminalia catappa L.*	Combretaceae	Jungli Badam	04
4.	*Borassus frabellifer*	Arecaceae	Palm	07
5.	*Cocos nucifera L.*	Arecaceae	Coconut	12
6.	*Syzygium cumini L.*	Myrtaceae	Jamun	06
7.	*Azadirachta indica*	Meliaceae	Neem	04
9.	*Ficus benghalensis*	Moraceae	Banyan	02
10.	*Ficus carica*	Moraceae	Fig (Audumbar)	01
11.	*Ficus religiosa*	Moraceae	Peepal	01
12.	*Mangifera indica*	Anacardiaceae	Mango	04
13.	*Carica papaya*	Caricaceae	Papaya	01
14.	*Moringa oleifera*	Moringaceae	Moringa	01
15.	*Acacia arabica*	Fabaceae	Babul	05
16.	*Bambusa vulgaris*	Poaceae	Bamboo	01
17.	*Schleichera oleosa*	Sapindaceae	Kusum	01
18.	*Nyctanthes arbor-tristis*	Oleaceae	Parijat	03
19.	*Pithecellobium dulce*	Fabaceae	Manila tamarind (Pink Imli)	01
20.	*Annona squamosa L.*	Annonaceae	Custard Apple (Sitafal)	02
21.	*Delonix regia*	Fabaceae	Gulmohar	01
22.	*Citrus limon*	Rutaceae	Lemon	02
23.	*Punica granatum*	Lythraceae	pomegranate (Anar)	01
24.	*Olneya tesota*	Fabaceae	Iron wood	01
25.	*Chinese ixora*	Rubiaceae	Ishwara	01
26.	*Hydrangea macrophylla*	Hydrangeaceae	Hortensia	01

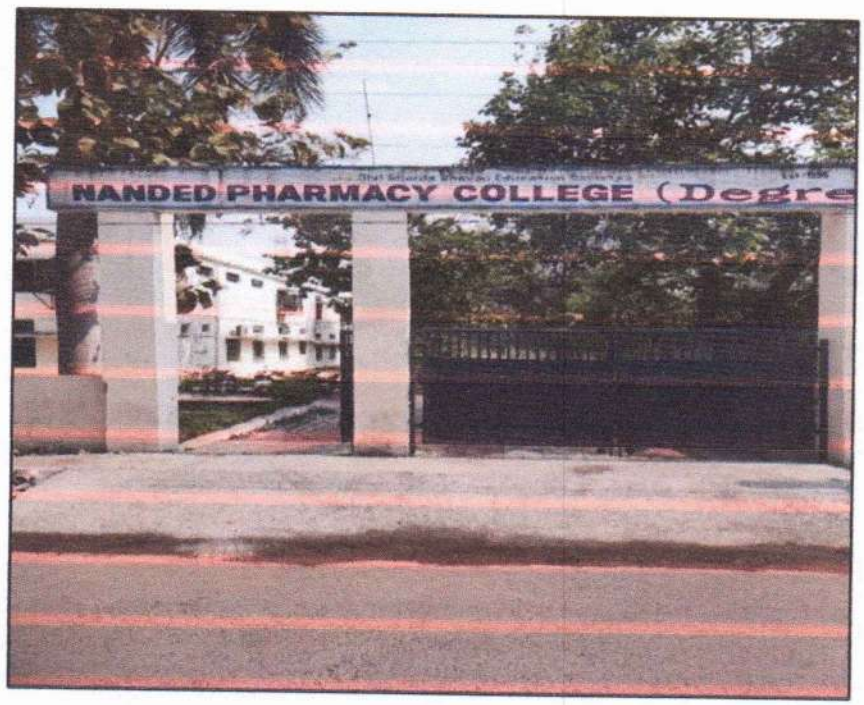


Photo 4: Main Gate of College

Photo 5: Main Entrance of College Campus

Photo 6: Green Campus

Animal Life at NPC, Nanded:

NPC is located in Nanded District of Maharashtra. Nanded is a city known for educational institutes, commercial development and ginning and pressing industries. It has got extreme climates. The highest temperature recorded is 45°C just prior to the onset of monsoon (around May- early June). Rainfall is normal, and is principally caused from late July to August by the moisture-laden South-West Monsoon. The climatic condition of the Nanded district as a whole and NPC in particular is very suitable for a wide variedly of flora and fauna to support its rich biodiversity. The Faunal Diversity of NPC campus has been studied and documented as below:

Table 7: Common and Scientific names of birds and animals

Sr. No.	Common Name	Scientific Name
1.	Common Myna	*Acridotheres tristis*
2.	Bank Myna	*Acridotheres ginginianus*
3.	House Sparrow	*Passer domesticus*
4.	House Crow	*Corvus splendens*
5.	Cuckoo	*Cuculidae*
7.	Yellow Wasp	*Ropalidia marginata*
8.	Butter Fly	*Danaus genutia*
9.	Common Woodshrike	*Tephrodornis pondicerianus*
10.	Pied Myna	*Gracupica contra*
11.	Red-Vented Bulbul	*Pycnonotus cafer*
12.	Skylark	*Aluda gulgula*
13.	Garden Tiger Moth	*Arctia caja*
14.	Little Owl	*Athene brama*
15.	Oleander Moth	*Syntomeida epilais*
16.	Slender Skimmer	*Orthetrum sabina*
17.	Pegeon	*Columbidae*

Photo 7: Common Myna (*Acridotheres tristis*)

Photo 8: Bank Myna (*Acridotheres ginginianus*)

Photo 9: House Sparrow (*Passer domesticus*)

Photo 10: House Crow (*Corvus splendens*)

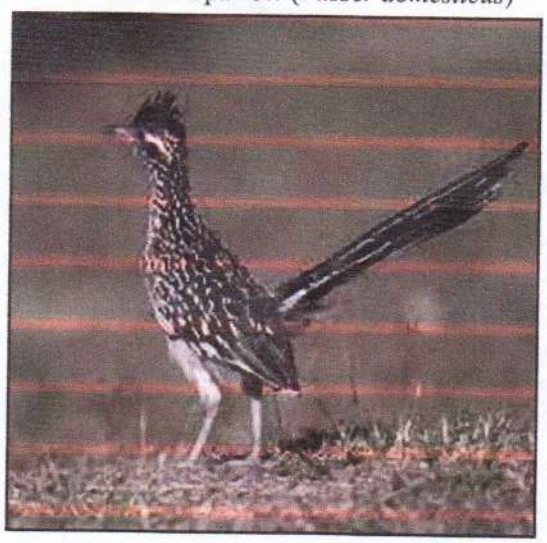


Photo 11: Cuckoo (*Cuculidae*)

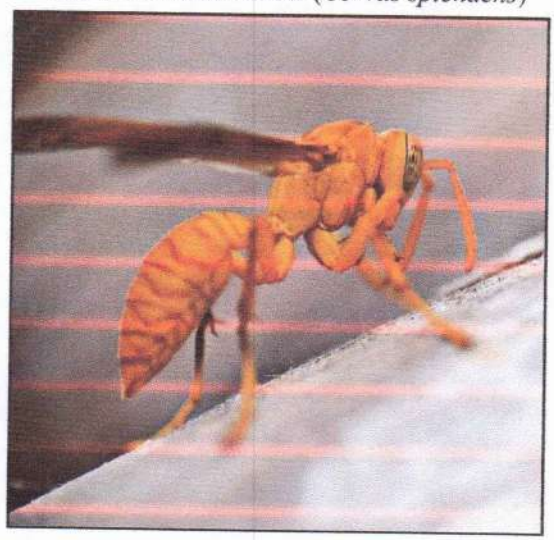


Photo 12: Yellow Wasp (*Ropalidia marginata*)

Photo 13: Butter Fly (*Danaus genutia*)

Photo 14: Common woodshrike (*Tephrodornis pondicerianus*)

Photo 15: Pied Myna (*Gracupica contra*)

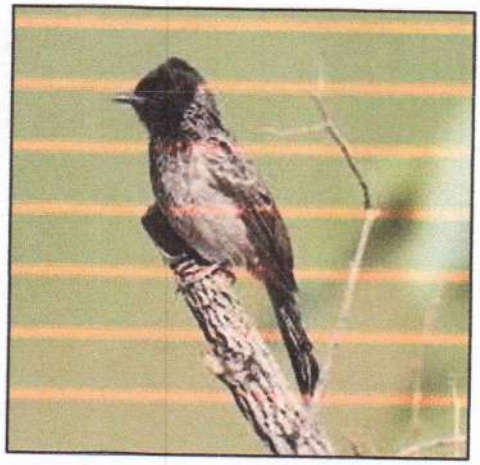


Photo 16: Red-Vented Bulbul (*Pycnonotus cafer*)

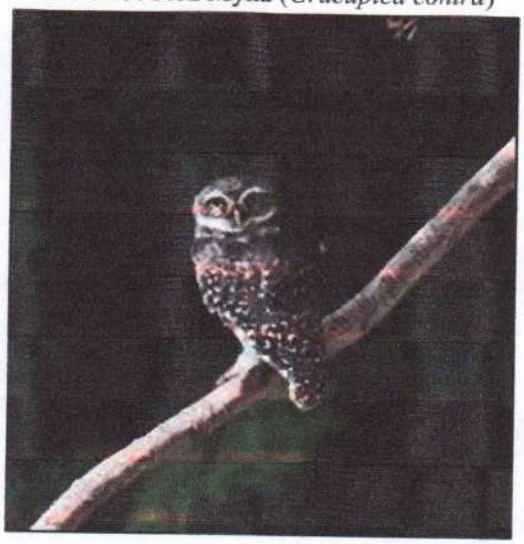


Photo 17: Little Owl (*Athene Brama*)

Photo 18: Garden Tiger Moth (*Arctia caja*)

Photo 19: Skylark (*Aluda gulgula*)

Photo 20: Oleander Moth (*Syntomeida epilais*)

Photo 21: Slender Skimmer (*Orthetrum sabina*)

Photo 22: Pegeon (*Columbidae*)

Meteorological Data of Nanded and NPC:

Location: 19°10'33" N, 77°18'30" E.

In Nanded, the climate is warm and temperate. The summers are much hot. The average annual temperature in Nanded is 27.2°C and precipitation level is about 900-1100 mm.

The driest month is generally December. There is 6 mm of precipitation in December. The greatest amount of precipitation occurs in August, with an average of 365.27 mm. With an average of 43.5°C, May is the warmest month. The lowest average temperatures in the year occur in January, when it is around 13°C. The precipitation varies 332 mm between the driest month and the wettest month. The variation in temperatures throughout the year is 18.44°C.

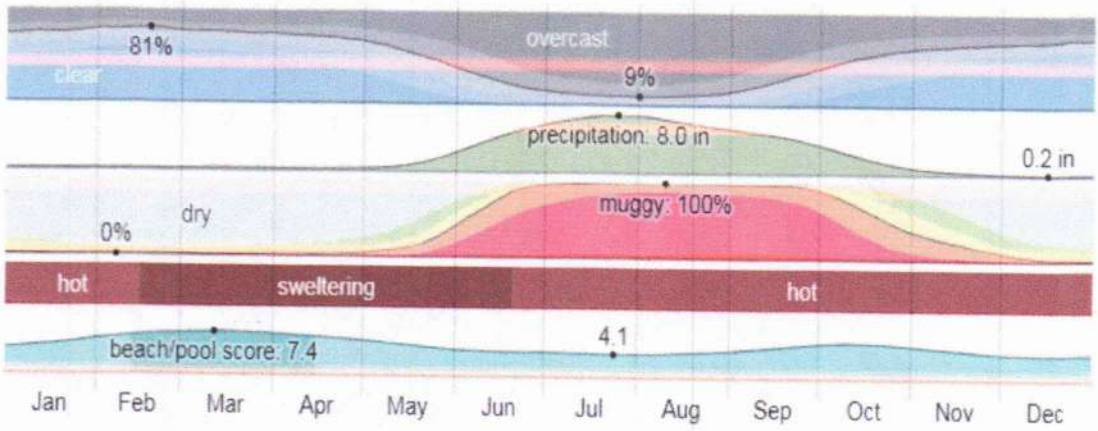
WEATHER DATA MONTH WISE Nanded (Source: Google)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	36.0 (96.8)	40.0 (104.0)	47.0 (116.6)	47.0 (116.6)	48.0 (118.4)	45.0 (113.0)	38.0 (100.4)	37.0 (98.6)	36.0 (96.8)	36.0 (96.8)	34.0 (93.2)	34.0 (93.2)	48.0 (118.4)
Average high °C (°F)	30.3 (86.54)	33.74 (92.73)	37.63 (99.73)	41.09 (105.96)	41.81 (107.26)	35.4 (95.72)	30.72 (87.3)	29.55 (85.19)	30.38 (86.68)	31.23 (88.21)	30.45 (86.81)	29.51 (85.12)	33.48 (92.26)
Daily mean °C (°F)	26.3 (79.34)	30.01 (86.02)	34.28 (93.7)	38.06 (100.51)	39.11 (102.4)	33.08 (91.54)	28.8 (83.84)	27.56 (81.61)	28.04 (82.47)	28.21 (82.78)	26.73 (80.11)	25.26 (77.47)	30.45 (86.81)
Average low °C (°F)	18.96 (66.13)	22.27 (72.09)	26.23 (79.21)	30.37 (86.67)	32.29 (90.12)	28.5 (83.3)	25.23 (77.41)	23.92 (75.06)	23.49 (74.28)	22.22 (72.0)	20.1 (68.18)	18.08 (64.54)	24.3 (75.74)
Record low °C (°F)	13.0 (55.4)	15.0 (59.0)	20.0 (68.0)	24.0 (75.2)	27.0 (80.6)	23.0 (73.4)	20.0 (68.0)	18.0 (64.4)	19.0 (66.2)	17.0 (62.6)	14.0 (57.2)	12.0 (53.6)	12.0 (53.6)
Average precipitation mm (inches)	7.53 (0.3)	6.71 (0.26)	9.54 (0.38)	7.3 (0.29)	15.55 (0.61)	242.26 (9.54)	326.84 (12.87)	365.27 (14.38)	273.87 (10.78)	95.26 (3.75)	15.76 (0.62)	3.3 (0.13)	1149.3 (45.25)
Average precipitation days (≥ 1.0 mm)	1.18	1.45	2.09	2.0	3.73	18.91	24.27	24.64	20.73	8.09	2.09	0.82	9.17
Average relative humidity (%)	37.21	28.87	21.52	18.67	21.21	50.97	69.06	76.15	75.54	61.54	52.16	42.84	46.31
Mean monthly sunshine hours	10.63	11.56	11.51	12.01	13.0	12.8	11.98	10.25	10.37	9.46	8.58	8.65	10.9

The riverine soil is a characteristic of the city of Nanded and its surroundings. The city is situated on the banks of the river Godavari. The geographical co-ordinate of Nanded is 19°10'33" N, 77°18'30" E. The city has an average altitude of 1188 feet or 362 meters from the average sea level. The land of Nanded is very much feasible for soyabean, sunflower and cotton cultivation.

The climatic conditions bear a strong resemblance with the other cities in the Maharashtra. The summers are usually very hot and the winters are very cold. The summers are prevalent during the months of March to June with April and May being the hottest months. The winter is prevalent from the month of November till the month of February. There is onset of Monsoon in June and from mid of June till October one experiences the transitional weather.

Weather Graph (Month-wise) Nanded



Air Quality in Nanded and NPC:

The ambient air quality data for Nanded and NPC for the last one year shows that there are very less polluted particles in ambient air; AQI for SO_2 & NOx parameters are within the range of Indian living standards. there are a number of factors responsible for this like cleanliness, calmness and serenity in this area. The ambient air quality of Nanded Area falls in between moderate to rich quality state. The Maharashtra Pollution Control Board is working over the various possibilities to reduce the air pollution for the improvement of ambient air quality with respect to AQI is concerned. However, the annual average value of PM_{10}, SO_2, NOx in the ambient air quality of Nanded city falls in the range of 50-62 |ig/m3, 3-5 |ig/m3, 10-12 |ig/m3 for most of the months, as such, the graded response action plan to eradicate the problem.

Air Quality Determination:

Satisfactory air quality index (OVERALL=58) in Nanded, Maharashtra, India on dated 20th June 2024:

Table 8: Air Quality Determination

Parameter	Result (Range)
NO_2	25.4 |ig/m^3, AQI 26 Very Good
NO	10.09 |ig/m^3, AQI 10 Good
O_3	31.49 |ig/m^3, AQI 31 Good
$PM_{2.5}$	28.13 |ig/m^3, AQI 28 Good
PM_{10}	77.2 gg/m^3, AQI 79 Satisfactory
CO	35.0 |ig/m^3, AQI 18
Humidity	56.0 %

Water Analysis Report of NPC:

(Courtesy: Shri Venkatesh Food Laboratory, Nanded)

Water quality testing is necessary because it determines contaminants and prevents waterborne diseases. Drinking or using contaminated water can result in severe health issues. Therefore, it is important to ensure that drinking water is safe, clean and free from microorganisms.

The parameters for water quality are determined by the intended use. Work in the area of water quality tends to be focused on water that is treated for human consumption, or in the environment.

Drinking water indicators:

The following is a list of indicators often measured by situational category:

- Alkalinity
- Colour of water
- pH value
- Odour
- Turbidity
- Total Dissolved Solids (sodium, chloride, potassium, calcium, manganese, magnesium)
- Microorganisms such as faecal coliform bacteria (*Escherichia coli*), Cryptosporidium, and *Giardia Lamblia*
- Dissolved metals and metalloids (lead, mercury, arsenic, etc.)
- Dissolved organics: Coloured dissolved organic matter (CDOM), dissolved organic carbon (DOC)
- Heavy metals
- Total hardness (as $CaCO_3$)
- Permanent hardness (as $CaCO_3$)
- Iron
- Fluoride

SHRI. VENKATESH FOOD LABORATORY

APPROVED BY AGMARK

Ministry of Agriculture Department of Agriculture & Co-operation

(GOVT. OF INDIA)

Saichatra Building, Nandkishor Nagar,

Purna Raod, (Near Deep Nagar) NANDED-431605(M.S.)

Sample Not Drawn By Venkatesh Lab

REPORT ON CHEMICAL EXAMINATION OF WATER FOR DRINKING PURPOSES

Date of Collection 11/05/2023 Date of Receipt 11/05/2023 Date of Examination 11/05/2023

Analytical Result in mg/litre (except pH and Turbidity)

Source :-Filter Water

Test	Results	Acceptable limit	Permissible limit
1)Physical Appearance	Clear	Should be clear	-
2) Odour	Agreeable	Agreeable	Agreeable
3) Turbidity (as N.T.U)	0.70	1	5
4) pH	6.54	6.5 to 8.5	No. Relaxation
5) Chloride (as Cl)	21.00	250	1000
6) Nitrates (as No3)	0.10	45	No. Relaxation
7) Nitrates (as No2)	Traces	Nil or Traces	-
8) Total hardness (as Caco 3)	32.00	200	600
9) Permanent hardness (as Caco 3)	Nil	100	200
10) Total Dissolved Solids	39.3	500	2000
11) Iron (as Fe)	Nil	0.3	No Relaxation
12) Fluoride (as F)	0.29	1.0	1.5
13) Alkalinity	36.00	200	600

Forwarded With Compliments to M/s, Principal, Nanded Pharmcy College, Nanded Dist. Nanded. (Maharashtra)

With reference to letter No.....Nil ..... .dated 11/05/2023

Shri Venkatesh Food Soil & Water Laboratory NANDED

Shri Venkatesh Food Laboratories

Chemist Incharge

It is distinctly Understood that the report furnished above will not be utilised for legal or commercial purpose.

Noise Level at NPC, Nanded & Surroundings:

The human ear is constantly being assailed by man-made sounds from all sides, and there remain few places in populous areas where relative quiet prevails. There are two basic properties of sound:

- Loudness
- Frequency

Loudness is the strength of sensation of sound perceived by the individual. It is

measured in terms of Decibels. Just audible sound is about 10 dB, a whisper about 20 dB, library place 30 dB, normal conversation about 35-60 dB, heavy street traffic 60-0 dB, boiler factories 120 dB, jet planes during take-off is about 150 dB, rocket engine about 180 dB. The loudest sound a person can stand without much discomfort is about 80 dB. Sounds beyond 80 dB can be safely regarded as Pollutant as it harms hearing system. The WHO has fixed 45 dB as the safe noise level for a city. For international standards a noise level up to 65 dB is considered tolerate. Loudness is also expressed in sones. One sone equals the loudness of 40 dB sound pressure at 1000 Hz. Frequency is defined as the number of vibrations per second. It is denoted as Hertz (Hz).

Materials, Study Area & Methods:

Noise is unwanted interference that affects the signal and may distort the information. Noise level is measured in decibels (dB). The louder the noise, the higher the decibels. Decibels can be adjusted to human hearing. Sound is measured in decibels (dB). A whisper is about 30 dB, normal conversation is about 60 dB, and a motorcycle engine running is about 95 dB. Noise above 70 dB over a prolonged period of time may start to damage your hearing. Loud noise above 120 dB can cause immediate harm to your ears.

Noise Test Pro App was used to measure the noise level. Noise test detects any noise, music or sound in your surroundings. It will tell you maximum, minimum and average decibels.

Description of the College Site:

The site of the NPC is bounded to the East by Shyam Nagar Road with various books stalls, restaurants, shops, coaching classes, women's hospital, & the B K Hall Road to the North with Residential properties, shops, restaurants, etc., to the West by SSBE Society's Girl's Hostel and to the south by open space of the society & further Mahatma Phule School.

Measurement Procedure:

The noise level was recorded at the different locations of NPC, NANDED. At each spot, the measurements were taken for 60 seconds during day time (6.00 am – 6.00 pm) and noted down the measurements. Screen shots of the measurements of noise were taken immediately on the app at the time of 60th second of each measurement.

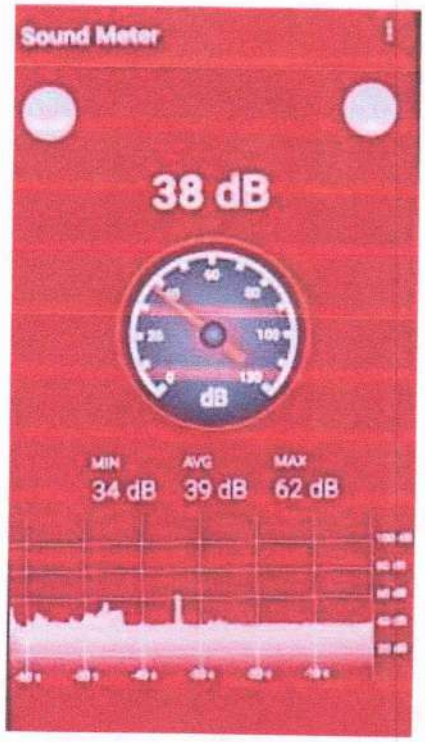


Photo 23: Noise Measurement by Sound Meter App

Results:

The results of the experiments at different places have been tabulated in the following table:

Table 9: Measurements of Noise in and around NPC:

Place in College	Duration in Seconds	Minimum (dBA)	Maximum (dBA)	Average (dBA)
Office	60	52	80	75
Principal's cabin	60	49	67	55
Library	60	50	65	61
Pharmaceutics Lab	60	44	82	71
Machine Room	60	49	80	72
Pharmacology Department	60	65	84	75
Pharmaceutical Chemistry Lab	60	65	84	75
Analytical Chemistry Lab	60	39	86	67
Pharmacology Lab	60	62	81	75
Computer Lab	60	64	81	77
Seminar Hall 01	60	34	76	67
Seminar Hall 02	60	52	74	70
Ground Floor	60	58	84	69
Floor 01	60	55	68	62
Floor 02	60	52	76	74
College Front Gate	60	49	77	70

Source: Data collected by Students of B. Pharm. VIII Semester. After the study, the measurements of noise have been recorded in and outside of NPC area:

- Inside the Campus: 38-86 dB
- Outside the Campus: 58-91 dB

Waste Disposal at NPC, Nanded:

Goal: Minimize the impacts of solid waste by proper collection, segregation and disposal of solid waste, liquid waste and e-waste.

Solid Waste Management:

Waste disposal are the activities and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process.

NPC has taken initiatives to segregate the waste at source winch is the first and most important step in waste management. The college encourages the process of eco-friendly waste disposal method. Maximum waste generated is recycled and reused. Each block and each floor are provided with dry waste collecting bins. Every day, dry waste is collected, segregated and handed over to the Municipal Garbage Transport. Enough bins are provided at wet waste prone. Dust bins are provided at specific points in the college premises.

With smart initiatives like "Think Green Campus Model", waste management is helping colleges and universities to achieve a higher level of environmental performance. By reusing or recycling we are contributing to the conservation of natural resources, saving energy, helping to protect the environment, reducing landfill. We will also reduce our impact on the environment by minimizing the carbon emissions associated with both disposing of old products and obtaining new ones. NPC adopts environment friendly practices and takes necessary actions such as - energy conservation, waste recycling, avoiding use of plastic etc. The biological reusable waste is processed as organic manure for the plants available in the college campus and the other solid waste generated in the college campus is taken to the community bin of Nanded municipality for recycling and disposal.

Photo 24: Bins for Separate Collection of Waste

Liquid Waste Management:

The college has separate drainage systems for the collection of laboratory waste water and utility section waste water. The laboratory waste water containing chemicals and pharmaceuticals is collected and released in to ground through a separate pipeline system other than that for other waste water. The institution also conducts discussions with students to make them aware of the liquid waste management techniques.

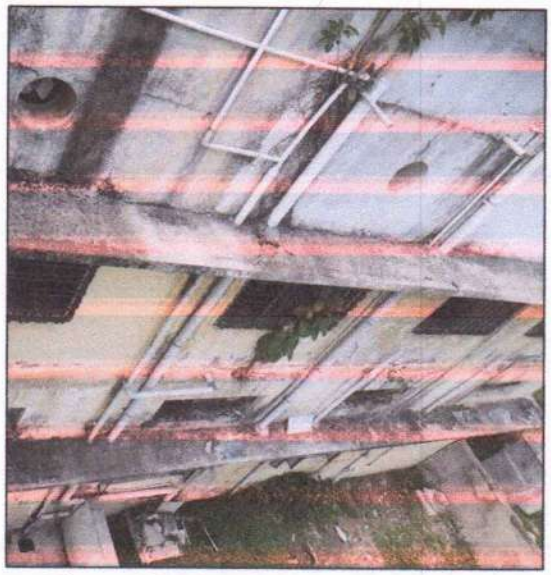


Photo 25: Liquid Waste Management

Hazardous Chemicals Waste Management:

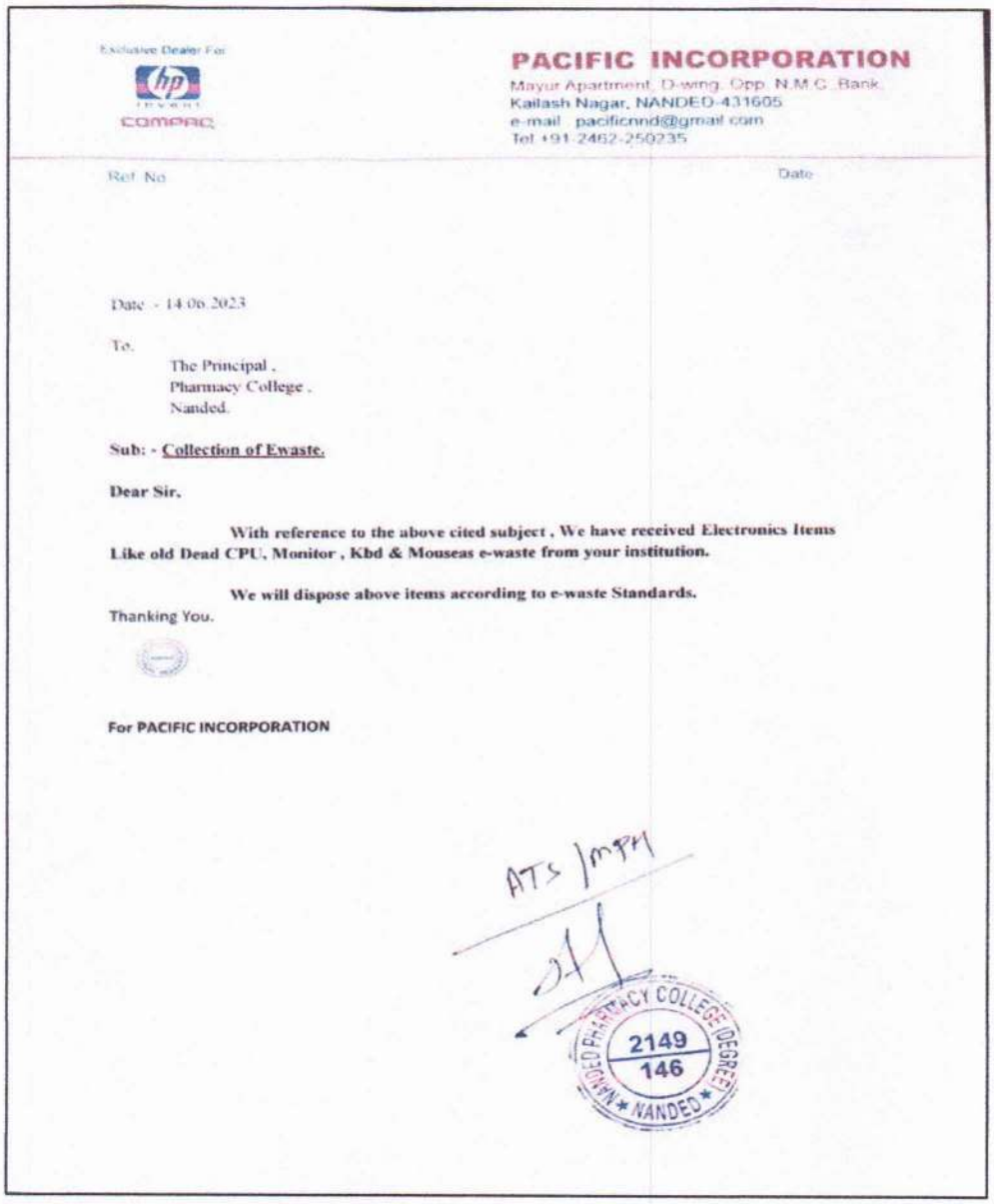
Following guidelines are followed in Nanded Pharmacy College for management of hazardous chemicals waste management:

- Regular affirmation that the containers are properly labelled, and materials are contained in an appropriate container.
- No use of any chemical not contained or labelled properly.
- Storing all hazardous materials properly, separating incompatibles, and storing in ventilated, dry, cool areas.
- The waste management oversees the collection and disposal of several waste streams from facilities, classrooms, and laboratories.
- Managing regularly hazardous waste like chemicals, oils arid cleaners.

Photo 26: Cabinet with Hazardous Chemicals

E-Waste Management:

The condemned batteries, CPUs and damaged computers are disposed of through outside agencies. Outdated computers and other electronic gadgets are sold to recyclers. Electronic goods are put to optimum use; the minor repairs are set right by the Laboratory Assistants and Teaching Staff, and the major repairs are handled by the Technical Assistant and are reused. The institute has an MOU with Pacific Incorporation which has a Warehouse meant for storage, dismantling and recycling of electronic waste with the support of latest technology.



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Tel :+91-2462-250235

Ref. No Date

Date :- 14.06.2023

To,
The Principal ,
Pharmacy College ,
Nanded.

Sub: - Collection of Ewaste.

Dear Sir,

With reference to the above cited subject , We have received Electronics Items Like old Dead CPU, Monitor , Kbd & Mouseas e-waste from your institution.

We will dispose above items according to e-waste Standards.

Thanking You.

For PACIFIC INCORPORATION

ATS / mpm

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MAHARASHTRA PHARMACY COLLEGE DEGREE NANDED

MOU with Pacific Incorporation

No Use of Plastic Policy:

The college has adopted and implemented the 'No Plastic Use Policy' on the campus. Students and staff members are advised to avoid the use of any kind of plastic material not only in the college but also during their routine activities. Instructions discouraging the use of plastics are displayed on the college campus to promote the No Plastic Policy.

Electrical Power Consumption at NPC:

NPC, being one of the oldest pharmacy colleges of Maharashtra, consumes on an average 2846 kW-hr (units) of electricity which turns out to be 34,157 kW-hr per year only to conduct various activities throughout the year. As a policy decision, the old filament bulbs, CFL bulbs and tube lights are replaced by low energy consuming LED bulbs in order to keep the electricity consumption of the college as low as possible. The college has installed sensor bulbs at corridor to minimize electricity consumption at night.

The college has Environmental Sciences as a vital subject in the syllabus, which helps making students aware of conserving and restoring energy resources. The sister institute, i.e., Yeshwant Mahavidyalaya has already implemented the solar power supply system for contributing the electricity requirement of the institute. Moving on the same way, NPC has installed solar poles with a capacity of 15 watts. The energy from this solar installation supports partially the institute's electricity demand from the grid. Thus, NPC is actively involved in energy conservation and energy generation by making modifications and using alternate energy source.

Non-Conventional Source of Energy:

The NPC uses electricity as the major energy source. The entire college including the classrooms, library, laboratories and administrative section consume electricity. Following is the list of various appliances in the college which work on electricity:

Sr. No.	Name of Appliance/ Equipment	Total Number
01.	Electric fans	72
02.	Air conditioners	11
03.	Tubes	50
04.	LED bulbs	46
05.	Street Lights (LED)	02
06.	Sockets	206
07.	Water motors	01
08.	RO motors	02
09.	Water coolers	01
10.	Computers	40
11.	Printers	10
12.	Xerox machines	02
13.	Scanners	01
14.	Exhaust fans	17
15.	CCTV cameras	16
16.	Projectors	02
17.	Smart boards	02
18.	Inverters	10
19.	Inverter Batteries	24

Electricity Management Monitoring:

On an average 34,000 Units/Year of electricity is consumed by the college (Data reference: Monthly electricity bills). Various electrical appliances used in the college campus have been listed here and many of them are cost effective. The NPC has taken many power saving initiatives such as displaying electricity saving stickers in the classrooms, library, laboratories and administrative section, and the staff members and students are instructed to switch of the fans, bulbs, tubes, exhaust fans etc. when not in use.

Electricity Management Monitoring		
Year:2023-24		
Month	**No. of Units**	**Amount (Rs.)**
April 2023	2833	21,830
May 2023	2053	17,810
June 2023	5617	33,250
July 2023	2816	24,250
August 2023	4001	10,440
September 2023	4445	17,950
October 2023	2443	21,490
November 2023	2727	21,020
December 2023	1796	16,230
January 2024	1593	14,450
February 2024	1727	15,630
March 2024	2106	18,960

Prepared by

Dr. A T Sharma

Approved by

Prof. Dr. N B Ghiware

Prof.(Dr.)N.B.Ghiware
I/C.Principal
Nanded Pharmacy College
Nanded.

NANDED PHARMACY COLLEGE (DEGREE) NANDED 2149 146