TECHNICAL REPORT OF HYGIENE AUDIT



Submitted to NIRMALA COLLEGE OF PHARMACY MUVATTUPUZHA, ERNAKULAM - 686 661, KERALA, INDIA Date of Audit: 26.07.2023 Valid till: 27.07.2025

Submitted by



NATURE SCIENCE FOUNDATION

(A Unique Research and Development Centre for Society Improvement) ISO 9001:2015, 14001:2015, 45001:2018 & 50001:2018 Certified and Ministry of MSME Registered Organization
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1. Introduction

A hygiene audit will provide an insight into how an organization operates in a sustainable manner in terms of hygiene environment to the stakeholders as per the International Standard for Occupational Health and Safety Management Systems (ISOHSMS). If an organization has a hygiene auditing process implemented already, then it should apply environmental context into a clean environment. Environmental audit is a natural management tool and it will become more effective when hygiene audit is added to it. It is an essential requirement to adopt an audit process for a sustained utilization of resources in a hygienic way in both developed and developing countries like India. Hygiene will be of different types such as personal hygiene, environmental hygiene, medical hygiene and public hygiene which are all interrelated between each other in terms of maintaining a hygienic atmosphere to the stakeholders (Chen *et al.*, 2015; Jeanes *et al.*, 2015).

Hygiene audit is a process that leads to extraction of information about guided procedures in hygiene implemented in an organization which provides a realistic assessment of how it protects or affects the health of stakeholders. It also measures the effects and provides solutions to overcome or reduce the adverse effects due to unhygienic conditions. This audit can minimize the hazardous materials (for example: food wastes and human wastes) utility in the campus remarkably which in turn reduce the adverse effects to human beings as a whole (Gould *et al.*, 2016). As per the Government norms and guidance, the environmental legislations including food consumption should be followed by all the organizations and necessary steps should be taken to minimize the food waste in any campus. The food wastes will lead to high contamination rates in the campus and also lead to cause diseases to the stakeholders and the public.

To ensure that the hygienic environmental management system, maintenance of environmental and personal hygiene, availability of clean resources, maintenance of water supply and hygiene, cleanliness ensured at the site of disposal of human waste materials and personal safety in the campus should be implemented effectively. Each year a plan for the hygiene audit should be prepared by the management of an organization. A committee of faculties and student representatives and social aware members appointed to take this plan forward in the beginning of every year will ensure that the entire hygienic environmental management system is implemented in the organization without any hindrance. An effective hygiene practice should be followed among the stakeholders which in turn useful to control a wide variety of disease outbreaks (Roethlisberger and Dickson, 2017).

A healthy population is the essential component of a country's wealth in terms of political, economic and environmental sustainability. In terms of population growth statistics, India is the fastest populating country to strike the second position in total population cover which is about 138 million and constitutes 17.25% of the total global population. Demographic status of India revealed that if the population increase continues to be at this rate, India is expected to be the most populated country by 2050. Along with the birth rate, social and environmental issues are also increasing and alarming now-a-days. As consequences of over population, social well-being of man



and status of quality environment of the country get affected by the developing pressure on food, clothes, housing and other basic necessities, unemployment, loss of standard of living, decrease of forest cover, environmental pollution, energy crisis, ecological degradation and lack of hygienic condition-resulting in the distortion of well-being of a country (Silvennoinen *et al.*, 2015).

2. About Hygiene Audit

According to M/s. Nature Science Foundation's hygiene audit guidelines, hygiene audit is a survey of extracting a cumulative information concerning the status of hygiene and sanitation of respective premises and individuals belonging to any organisation such as academic or non-academic institutes, industries, food establishments and any other enterprises. This audit provides realistic data on how the organisations' cleanliness affect people's health and environment. A set of prominent objectives and goals are predetermined prior to hygiene audit with an aim to reduce the adverse effects of contaminated surfaces to human beings and to eradicate hazardous substances from the compound remarkably to diminish the multiplication of infectious diseases (Presscott *et al.*, 2005).

As per the norms of the Health department of Indian Government, the environmental legislation's guidelines for food consumption should be followed by all the Organizations without any deviations. Hygiene audit process determines to monitor and record the sanitation status and personal hygiene to make strong recommendations for the complete cleanliness of environment and individuals associated with the organisation. The outcome of the hygiene audit suggests to give pure atmosphere to various stakeholders such as employees, faculties, supporting staff members, parents and students those who are depending upon the educational institutions and the employees and customers of other business establishments.

To achieve a hygienic environmental management system in an academic institution and industry, maintenance of environmental and personal hygiene, availability of clean resources, maintenance of quality water supply and cleanliness ensured at the site of disposal of human waste materials in the campus should be implemented effectively. A periodic conduction of hygiene audit can ensure these practices in an institution-making both the human health and environmental safety protected which is the key focus of a hygiene audit.

Hygiene auditing is a management tool to objectively and systematically evaluate hygiene environment and sanitization management systems with the following objectives:

- Number of microbial load in the air.
- Methods of disposal of food and human wastes.
- Availability of hand wash, soap, sanitiser, dryer, tissue roll, etc.
- Placing environmental information in the public domain.
- Facilities of sufficient ventilation, napkin disposal and waste management.
- Effective water purification and recycle system for use of hygienic water.



3. Aims and Objectives of the Hygiene Audit

The main objectives of a hygiene audit is to achieve complete safety for both people and the environment of any organization by promoting the hygiene management and sanitization standards in the enterprise. The hygiene audit identifies, quantifies, describes and prioritizes the framework of hygienic environment in compliance with the applicable regulations, policies and standards to the stakeholders. The main objectives of a hygiene audit are:

- To assess the diversity and density of microbial wealth in the atmosphere.
- To assess the waste management strategies and methods of disposal of food and human wastes.
- To check the availability of tools and materials for hygiene such as hand wash, soap, sanitiser, dryer, tissue roll, hand gloves, masks, lab coats, etc.
- To be aware of the public domain with personal and environmental hygiene.
- To ensure the facilities of sufficient ventilation, napkin disposal and waste management in the campus.
- To check the availability of effective water purification and recycling systems for ensuring the safety of drinking water.

4. Checklists for the Hygiene Audit

The checklists for the conduct of a hygiene audit, different parameters on personal as well as environmental hygiene have been included. Availability of sanitizing materials like soap, hand wash liquid, detergents, sanitizer, lab coats, hand gloves, towels, tissue paper rolls, etc. nearby washbasins and restrooms should be made available to the customers. Lot of awareness programmes on personal and environmental hygiene, pest management strategies adopted, sanitation methods, hygiene maintenance and instructions to be followed for the stakeholders may be conducted regularly through hygiene clubs, forums, cells and associations. In addition, the details on water purification systems (if any), water recycling, disposal of food wastes, human wastes and other refuse along with the justifications on sufficient ventilation (both natural and mechanical) and proper napkin disposal facility should be made available.

In order to determine the quality practices undertaken by any organization or FBO (Food Business Operator) and to recommend more convenient strategies to eradicate contaminants coming out from the food wastes. Hygiene audit inspectors follow a set of predetermined checklists as per the International Standard for Occupational Health and Safety Management Systems.

5. Procedures followed in the Hygiene Audit

Hygiene auditing ensures the monitoring and safeguarding the standards of sanitation by assessing both the organizations' as well as the associated people's hygiene practices and by suggesting such establishments with proper measures of cleanliness. According to hygiene audit criteria, in order to perform hygiene audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, enumeration of various microorganisms such as bacteria, fungi and actinomycetes in air using suitable basal media, measurements and



recommendations. As the major contaminants causing hygiene issues and disease outbreaks due to various pathogenic microorganisms in the atmosphere that cannot even seen with naked eyes, it focuses on the enumeration of several microbial colonies in the Petri plates containing nutrient medium (Pelczar *et al.*, 2000).

The food base that supports the growth of an organism is called culture medium. The culture media are formulated in various forms according to the growth habits of microorganisms. However, the culture media are should be prepared under sterile condition by weighing and dispensing the individual ingredients (carbon, nitrogen, vitamin, amino acids, iron, zinc, magnesium, manganese, sodium, etc.) or procuring ready-made media from the market. Generally the common nutrient media contain both organic and inorganic nutrients required for the enriched growth of specific microorganisms. Agar agar can be used to solidly the media and culture plates can be exposed in different areas of an organization. This will help ensuring the maintenance of hygiene and cleanliness of the area.

5.1. Preparation and Cleaning of Glassware and Plasticware items

Glassware and plasticware items and culture media were properly cleaned with 10% sodium hypochlorite solution and washed properly with distilled water subsequently sterilized using an autoclave at 120°C temperature and 15 lbs/psi pressure (Cappuccinio and Sherman, 2004). To evaluate the contamination source and rate of contaminants in the air at canteens, hostels, cafeterias/food court, seminar halls, auditorium, classrooms and the kitchen in the organization, simple culture media such as nutrient agar, potato dextrose agar and casein-nitrate agar were used to enumerate bacteria, fungi and actinomycetes; respectively. Conical flask, Sterile water, Non-absorbent cotton, Spatula, Autoclave, pH meter, Electronic balance, Brown paper, Butter paper, etc. were used for the preparation of basal media.

5.2. Preparation of Culture Media

Media components for Nutrient agar (NA) medium are Peptone (5.0 g), Sodium chloride (5.0 g), Beef extract (3.0 g), Yeast extract (3.0 g), Agar Agar (30.0 g) and Distilled water (1000.0 ml). Around 600 g of peeled potato (not infected) were boiled in 600 ml of distilled water and subsequently filtered through a muslin cloth thoroughly. It was made up to 1000 ml with distilled water in which 20.0 g each of Dextrose and Agar agar were added. Starch-casein agar (SCA) medium was prepared by mixing of 10.00 g of Starch, 0.30 g of Casein, 2.00 g each of KNO₃, NaCl, K₂HPO₄, 0.50 g of MgSO₄.7H₂O, 0.02 g of CaCO₃, 0.01 g of FeSO₄.7H₂O, 1 litre of Distilled water and 15 lbs/psi pressure. After sterilization, these media were poured onto sterile Petri plates and allowed for solidification under sterile condition in a Laminar air flow hood.

5.3. Enumeration of Bacteria, Fungi and Actinomycetes in air samples

The sterile Petri plates containing nutrient agar, potato dextrose agar and caseinnitrate agar were taken for the enumeration of bacteria, fungi and actinomycetes; respectively in air to assess the number aero-flora (IMTECH, 1998). These plates were exposed for 2-3 minutes at specific places where the number of microorganisms as microflora in the air were to be enumerated. The exposed Petri plates were incubated under room temperature for 24-96 hours.



The number of bacterial colonies grown in the Petri plates containing nutrient agar medium within 24-48 hrs of incubation period were counted using a Colony counter. In the case of fungal growth, the Petri plates containing potato dextrose agar medium were observed after 72-96 hrs of incubation. The colony of actinomycetes were recorded in between the incubation period of 48-72 hrs. The bacterial colonies exhibited different shape, size, colour and texture on morphology. Fungal colonies were identified based on visual characteristics such as colony morphology, elevation, colony margin, aerial mycelium and colony colour. Actinomycetes showed a good sporulation with compact, chalk-like dry colonies of different colour variation from pink to white colour on the Petri plates and shown a branched mycelium in their cell morphology similar to fungal characters (Holt, 1989; IMTECH, 1998).

6. About the Organization

6.1 . Nirmala College of Pharmacy (NCP)

Nirmala College of Pharmacy (NCP) is yet another hallmark of the commitment and experience of the catholic diocese of Kothamangalam in the field of education. NCP is a christian minority institution established in 2004 as a memorial of the diocesian golden jubilee. It is managed by the Catholic diocese of Kothamangalam under Nirmala College Society. (Reg. No. ER.928/2001). At present the college is affiliated to Kerala University of Health Sciences, Thrissur. This college is approved by Govt. of Kerala and Pharmacy Council of India (PCI), New Delhi. The college aims at the formation of students with academic excellence coupled with integrity of character.

It provides excellent infrastructural facilities with all modern amenities, a dedicated and experienced faculty with a vision to develop the institution into a full-fledged pharma-research centre. Mar George Madathikandathil, Bishop of Kothamangalam is the Patron and Rev. Dr. Msgr. Pius Malekandathil is the President. The foundation stone of the college was laid by Mar George Punnakottil, the Patron on 19th March 2004. The College was inaugurated by Sri. Vayalar Ravi, Union Cabinet Minister for Overseas Affairs on 15th March 2009. The New block of the college was blessed by Mar. George Madathikandathil, Bishop of Kothamangalam diocese and inuagurated by Sri. P.J. Joseph Honourable Minister for Water Resources on 22nd May 2015.U.G Pharmacy course is accredited by NBA till 2025

About Nature Science Foundation (NSF)

NSF is an ISO 9001:2015, 14001:2015, 45001:2018 and 50001:2018 certified and registered with Ministry of Micro, Small and Medium Enterprise (MSME), Government of India Organization functioning energetically towards the noble cause of nature conservation and environmental protection. NSF is managed by a board of trustees of NSF Public Charitable Trust under the TN Societies registration Act 1975 (TN Act 27 of 1975) on 29th November, 2017 at Peelamedu, Coimbatore- 641 004, Tamil Nadu, India with Certificate of Registration No. 114 / 2017. In addition, NSF has 12A, 80G and Form 10AC certificates for income tax exemption and implanting various Government schemes. The main motto of the NSF is to "Save the Nature to Save the Future" and "Go Green to Save the Planet". NSF Branch Offices are also functioning effectively at Gorakhpur, Uttar Pradesh and Faridabad, Haryana, India to adopt the 'Go Green Concept' in a big way. NSF family is wide spread across India with over 115 state-wise Lead auditors to conduct Green and Environment Audits.



NSF is functioning strenuously to conduct different awareness programmes and implement various schemes to public and school / college students towards the noble cause of nature protection. Some of the programmes are also being organized for the benefit of tribal communities to create the supply chain for biodiversity conservation studies. The objectives along with vision and mission are illustrated to promote educational and environmental awareness programmes through social activities for enhancing the quality of life and to conserve nature from environmental pollutants using traditional and modern technologies for sustainable land management. NSF is educating the tribal community children through social service and towards the upliftment of tribes as a whole and make them as entrepreneurs.

International Eco Club Student Chapter (IECSC) has been established for Student volunteers and faculty members are encouraged to conduct National and International events, Student Technical Symposium, Distinguished lecture programme, Environment day celebration, Ozone day celebration, Project model exhibition, Awareness programmes on Environmental pollution, Biodiversity and Natural resources conservation and etc. with the financial support of the Foundation. NSF is being released 'Magazine' and 'Newsletter' biannually to share the information about Environmental awareness programmes on biodiversity conservation, seminar on soil conservation, water management and solid waste management, restoration and afforestation programmes in Western Ghats of southern India.

In order to encourage the students, members of faculty, academicians, scientists, entrepreneurs and industrial experts those who are involving in nature protection and biodiversity conservation studies across the world, NSF tributes the deserved meritorious candidates with various awards and honours such as 'Best Faculty Award', 'Best Women Faculty', 'Best Scientist Award', 'Best Student Award', 'Best Research Scholar Award', 'Best Social Worker Award', 'Young Scientist Award', 'Life-Time Achievement Award' and 'Fellow of NSF'. These award and honours will be given to the deserved meritorious candidates during the 'Annual Meet and Award Distribution Ceremony' which will be conducted every year during the first week of January.

NSF has introduced various types of Audits such as 'Eco Audit', 'Green Audit', 'Energy Audit', 'Hygienic Audit' Water & Soil Audit, Plastic Waste Management Audit, Biomedical Waste Management Audit, Solid Waste Management Audit, E-Waste Management Audit, Academic & Administrative Audits including ISO certification process to Academic Institutions, R&D Organizations and Industries towards the accreditation process as well as maintaining a hygienic eco-friendly environment to the stakeholders in their campus. All audits will be conducted as per the Checklist prepared by the NSF ISO Criteria and in compliance with Government Law and Environmental Legislations including World / Indian Green Building Council and the concept of Swachh Bharath Abhiyan under Clean India Mission. Green campus and Environment Policy, Purchase Policy, Energy Policy, MoU, International Eco Club student Chapter. Audit Certificates will be given to get the maximum mark weightage from NAAC. Audit processes are being conducted through the certified Auditors as per the following



Audit	Certified Auditors	Certified Auditors
Green Audit	• IGBC - Indian Green	Dr. S. Rajalakshmi
	Building Council	Dr. R. Mary Josephine
	• GBCRS - Green Building	Dr. B. Mythili Gnanamangai
	Code and Green Ratings	➢ Er. Ashutosh Kumar
	Systems	Srivastava
	• GRIHA – Green Rating for	Er. N. Shanmugapriyan
	Integrated Habitat	
	Assessment	
Energy Audit	• BEE - Bureau of Energy	Er. D. Dinesh kumar
	Efficiency	Er. N. Shanmugapriyan
	• LEED - Leadership in	Dr. N. Balasubramaniam
	Energy and Environmental	Dr. P. Thirumoorthi
	Design	Dr. G. Murugananth
	 CII-GreenCo – GreenCo 	C
	Rating System Felicitator	
Environment	• IGBC -Indian Green	Dr. S. Rajalakshmi
Audit	Building Council	\rightarrow Dr. A. Geetha Karthi
	 ASSOCHAM - Associated 	 Dr. R. Mary Josephine
	Chambers of Commerce	 Dr. B. Mythili Gnanamangai
	and Industry of India	 Er. Ashutosh Kumar
	• FSRS – Fire Safety &	Srivastava
	Rescue Services	 Er. N. Shanmugapriyan
Hygiene Audit	• FSMS – Food Safety	 Mrs. Gaanaappriya Mohan
<i>J</i> 8	Management System &	➢ Er. Ashutosh Kumar
	• Occupational Safety &	Srivastava
	Health (ISO 22000:2018)	Dr. R, Sudhakaran
	• SBICM - Swatch Bharath	-
	under India Clean Mission	5
Waste	• Water & Soil Audit,	Mrs. Gaanaappriya Mohan
Management	×	Er. Ashutosh Kumar Srivastava
Audits		Dr. R, Sudhakaran
	0	Er. N. Shanmugapriyan
	Solid Waste Management	
	Audit, E-Waste	
	Management Audit as per	
	the Checklist of NSF	
Academic &	Academic &	Dr. B. Anirudhan
Administrative	Administrative Audits as	➢ Dr. B. Shreeram
Audits	per the NAAC Criteria and	
	ISO implantation	
	procedure	
ISO	QMS (9001:2015), EMS	Er. Ashutosh Kumar Srivastava
Certification	(14001: 2015), OHS (45001:	
Continuation	2018), ISMS (27001:2018),	c c
	2010, 10100 (27001.2010),	



C C	QMSMD				Mrs. Gaanaappriya Mohan Dr. R. Mary Josephine
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7. Audit Details

Date / Day of Audit Venue of Audit	 26.07.2023 Nirmala College of Pharmacy Muvattupuzha, Ernakulam Dt, Kerala-686 661, India 			
Audited by	: Nature Science Foundation, Coimbatore, Tamil Nadu, India.			
Audit type Name of Auditing Chairman	 Hygiene Audit Dr. S. Rajalakshmi Jayaseelan, Chairman of NSF & ISO QMS, EN OHSMS, EnMS Auditor. 	ΛS,		
Name of Lead Hygiene Auditor	 Dr. B. Mythili Gnanamangai, Vice Chairman of NSF, Indian Gree Building Council Accredited Professiona 			
Name of the Hygiene Auditor	: Dr. P. V. Sreenivasan	Dr. P. V. Sreenivasan ISO FSMS OHS Hygiene Auditor, NSF.		
Name of Subject Expert-I Name of Subject Expert-II	Mr. B.S.C. Naveen Kumar, Senior Faculty, Mahatma Gandhi National Council of Rural Education, Ministry of Higher Education, Hyderabad. Dr. N. Saranya Professor in Microbial Food Technology.			
Name of Subject Expert-III	: Er. D. Dinesh Kumar, Certified Lead Auditor, IGE ASSOCHEM, GRIHA & LEED	3C,		
Name of Eco & Green Officer	: Ms. V. Sri Santhya, Environment, Energy & Green Cour Programme Officer, NSF.	ncil		





Meeting with Principal and IQAC Coordinators of Nirmala College of Pharmacy, Muvattupuzha, Kerala with Audit Team of the Nature Science Foundation

8. Observations of the Hygiene Audit

8.1. Enumeration of Microbes in air at different locations of the Organization

Microbes such as bacteria, fungi and actinomycetes; respectively were enumerated using suitable media such as nutrient agar, potato dextrose agar and caseinnitrate agar as contamination source, rate of contaminants and microflora in the air at different locations of the Organization such as Class Room, Cooking Area, Seminar Hall, Library and Boys Canteen. The results indicated that actinomycete colonies were found to be lesser than fungal and bacterial colonies in terms of number of colony forming units (cfu) in all the localities of the Organization. All the three microbes were found to be high at Canteen followed by Prayer hall and Class room and least with Principal's cabin. The number of bacterial, fungal and actinomycete colonies at Canteen recorded was 13, 15 and 11 cfu.



Total number of microbial colonies showed that bacterial colonies were about 80.9 cfu, fungal colonies were about 57.6 cfu and actinomycete colonies were about 41.9 cfu, (Table 1 and Figure 1). Generally, actinomycete colonies are found to be least (Avg. 08.38 cfu) always in all the places due to generic characteristic features. On the other hand, bacterial colonies were analysed always exhibited higher (16.18cfu) due to small size and rapid multiplication factors. The fungal colonies were always placed in between two microorganisms (11.52 cfu) such as bacteria and actinomycetes in terms of size, shape, growth, doubling time and generic characters.

S.No.	Name of the Place	Number of Microbial colonies (cfu) *			
		Bacterial	Fungal	Actinomycete	
		colonies	colonies	colonies	
1.	Class Room	20.1	13.4	13.4	
2.	Office	10.7	9.5	03.5	
3.	Chemistry lab	17.4	13.2	06.7	
4.	Computer lab	16.6	10.3	11.1	
5.	Board room	16.5	10.2	06.6	
	Total / Average	81.3	56.6	41.3	
	number of	(16.26)	(11.32)	(08.26)	
Microbial colonies					

Table 1. Number of Microbial colonies in air at different locations of KGiSLInstitute of Technology, Coimbatore, Tamil Nadu

Cfu: Colony forming units

* Average three replicates

** Values in the parentheses are the average number of microbial colonies.

Note:

- ▶ Bacterial colonies were enumerated in Nutrient agar plates on 24 hrs interval.
- > Fungal clusters were counted in Potato Dextrose agar plates on 72 hrs interval.
- > Actinomycete colonies were counted in Casein Nitrate agar plates 48 hrs interval.

Standards (APHA, 2015):

- Number of bacteria maximal limit is 100 cfu
- Number of fungi maximal limit is 65 cfu
- Number of actinomycetes maximal limit is 50 cfu



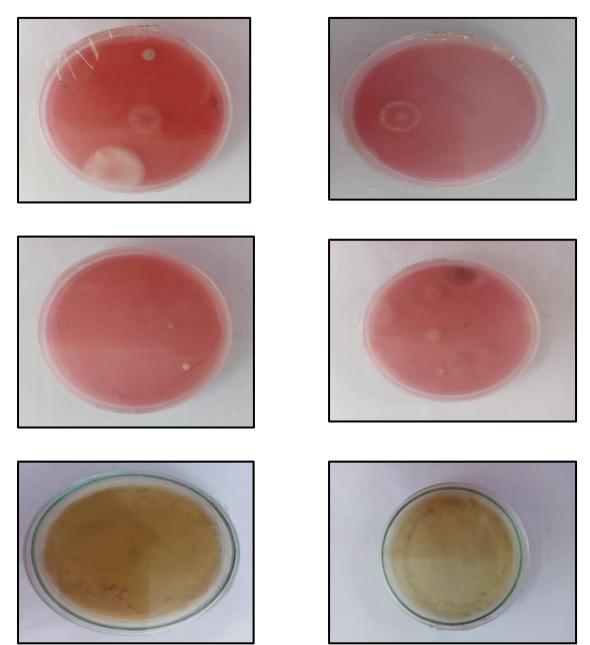


Figure 1. Growth of various microbial colonies in culture media kept at different localities of Nirmala College of Pharmacy, Muvattupuzha, Kerala.

8.2. Observation on Personal Hygiene and Safety measures

A number of illness and disease outbreaks are reported to be consequences of lack of maintaining proper personnel hygiene among people. By touch, handling of contaminated food, contact with the untidy surfaces can cause invasion of germs and other contaminants. A good personal hygiene is primarily achieved by cleansing hands to remove germs. Soap washing or use of sanitizers ensures removal of 90% of germs and protects the person from catching illness and spreading it to other people. Hence, it is important to



Hand wash with a soap

create awareness among the stakeholders on personal hygiene.



As far as the stakeholders and employees are concerned, the safety and convenience of everyone working/access to the organization, the following safety rules should be observed at all times. The following basic steps should be followed at all times reduce the contamination of the working to especially in edible environment preparation areas. Wearing a laboratory coat or apron along with hand gloves and caps before entering a working clothes environment for protecting from contamination or accidental discoloration by staining solutions are always mandatory in Organization's hygiene. The observation on providing hygiene environment to the stakeholders at NCP campus revealed that sanitizing materials such as soap, liquid detergent, tissue paper role, hand gloves, hand towels are made available nearby washbasins and restrooms focussing towards personal hygiene and sanitation



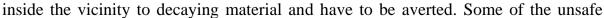
related concerns. It is observed that working tables and benches are kept clean at laboratories across the Departments. The working tables and benches are regularly cleaning with a disinfectant solution and neat cloth. Equipment and machineries are very neatly maintained without any dusts and covered with the appropriate covers. Appropriate dustbins and eco-friendly covers are made available at laboratories, canteens, food courts, cafeteria and hostels across the campuses. At hostel dining halls a nd canteens, food suppliers are tied their long hairs properly and wear disposable hand gloves, full cover aprons and caps to minimize contamination and fire hazards.

Details of pest management strategies adopted (cockroach traps, rodents control measures, insect repellents and other control facilities) at the campus is very good. Food preparation (kitchen) area at hostels and canteen is very clean, free of insect pests and in good state of ventilation and exhaust system along with proper water supply and drainage. It is observed that waste disposal area and waste disposal collection centre are neat and regularly cleaned, free of insect pests and free of spillage with no stagnation of water in food zones.

8.3. Napkin disposal facility

Menstrual Hygiene Management (MHM) is an indispensable part of the Swachh Bharath Mission Guidelines (SBM-G) for adolescent girls and ladies. As in step with MHM hints, 'Safe disposal' method making sure that the process of destruction of used and dirty materials is performed without human touch and with minimum environmental pollutants and 'Unsafe disposal' method throwing used material into ponds, rivers, or inside the fields exposes others





practices of napkins include throwing them unwrapped into fields and rooftops, wrapping them in paper/ plastic bags and throwing them outdoors or in dustbins, burying them for de-composting, throwing them in latrine / toilets, burning it. These unsafe practices are to be avoided and rather health practices can be adopted.

The NCP Campus is implementing the safe practices of disposing of napkins using small scale incinerators in ladies hostels. Incinerators facility and disposal structures in the proper directions and other social stigmas connected to menstruation influences the sanitary waste disposal conduct of women within the campus is very much appreciated. The Management is taking care of adolescent girls and ladies significantly in terms of their personal hygiene and safety.



Napkin Vending Facilities in Nirmala College of Pharmacy, Muvattupuzha, Kerala.

9. Best Practices followed on Hygiene in the Organizationf

- No person is suffering from a disease or illness or with open wounds or burns among the students, teaching and non-teaching staff members including supportive staff and management people across the campuses observed during the hygiene audit which indicated the campus is very keen interest in providing good hygiene atmosphere to the stakeholders.
- The sanitizing materials such as soap, liquid detergent, tissue paper role, hand gloves, hand towels, etc. are made available nearby the washbasins and restrooms focussing towards the personal hygiene and sanitation related concerns to the stakeholders.
- Appropriate dustbins and eco-friendly covers are made available at laboratories, canteens, food courts, cafeteria and hostels across the campuses to control the spread of wastes and contaminants from one place to another place and without harming the environmental health.
- The pest management strategies adopted (cockroach traps, rodents control measures, insect repellents and other control facilities) at the campus is very good. The



laboratories, classrooms, hostels, canteens, foot courts and toilets / restrooms are very neat and clean with proper ventilation and exhaust system.

- Food handlers are equipped with suitable personal safety materials like disposable hand gloves, full cover aprons and caps to minimize contamination and fire hazards at hostel dining halls and canteens to minimize contamination and fire hazards.
- Maintenance of equipment and machinery items are very good and being carried out regularly as per the instructions of the manufacturer. They are neatly maintained without any dusts and covered with the appropriate covers. They college management has signed a MoU to maintain Hygienic environment.
- Pest control programmes for cockroach, house flies, mosquitos, rodents etc. are effectively implemented and pest control activities (eggs, larvae, pupa, faeces, etc.) are carried out by trained and experienced personnel and no signs of pest activity or infestation in the Organization premises is noticed.

10. Recommendations for Personal and Environment hygiene

- The Quality Policy of the Organization regarding personal, environmental, food, water and occupational hygiene may be developed generously to provide good hygiene to the stakeholders.
- Hygiene audit team comprising of management representatives, faculties, staff members and social aware members may be formed to inspect the different places like laboratories, classrooms, seminar halls, auditorium, hostels, canteens, food courts and toilets / restrooms to check the cleanliness and maintenance.
- In order to conduct hygiene audits effectively in organizations, training of personnel is a prerequisite for which efforts may be taken by the Organization.
- Lot of awareness programmes on personal and environmental hygiene, pest management strategies adopted, sanitation methods, hygiene maintenance and instructions to be followed for the stakeholders may be conducted regularly through hygiene clubs, forums, cells and associations.
- All food handlers have basic food hygiene certificates by attending training programmes, seminars, conferences, workshops and skill upgradation events to update their knowledge as well as to know the latest techniques in food science and technology.

11. Conclusion

Nirmala College of Pharmacy, Muvattupuzha, Kerala is a well-established and it stands outstanding in India in terms of academic activities, efforts are continuously made in providing an eco-friendly hygiene atmosphere to the students, research scholars, parents and staff members. The laboratories, canteens, food courts, cafeteria, hostels and corridors across the campuses are very neat and clean. The number of microbes such as bacteria, fungi and actinomycetes were found to be less in different localities of the campuses which reflected low level of contamination source and rate of contaminants including microflora in the air. The air quality is very good in terms of least number of microflora such as bacteria, fungi and actinomycetes in the air. The washbasins and restrooms are equipped with the sanitizing materials such as soap, liquid detergent, tissue paper role, hand gloves, hand towels, etc. and are made available to the stakeholders to improve their personal hygiene and sanitation. Monitoring of efficient hand wash, urinals and latrine and bath room facilities in the campus are highly



appreciated. The Campus ecosystem is supported in making a sustainable environment to promote sanitation and cleanliness which enhance the teaching and learning. To conclude the hygiene audit report, NCP Campus is an eco-friendly campus and providing pure atmosphere and personal safety to the stakeholders in terms of various hygienic measures such as regarding personal, environmental, food, water and occupational hygiene. In addition, a large number of awareness programmes on personal and environmental hygiene, pest management strategies adopted, sanitation methods, hygiene maintenance are being conducted to the stakeholders regularly through hygiene clubs, forums, cells and associations which supports to the nation as a whole in terms of providing hygienic environment.

12. Acknowledgement

Nature Science Foundation, Coimbatore, Tamil Nadu, India is grateful Nirmala College of Pharmacy, Muvattupuzha, Kerala for providing us necessary facilities and co-operation during the hygiene audit process. This helped us in making the hygiene audit a success. Further, we hope that the best practices followed by the College on environment sustainability with respect to the personal hygiene and safety to the stakeholders and recommendations along with suggestions given by the NSF will boost the new generations to take care of the healthy environment and personal hygiene along with personal safety.

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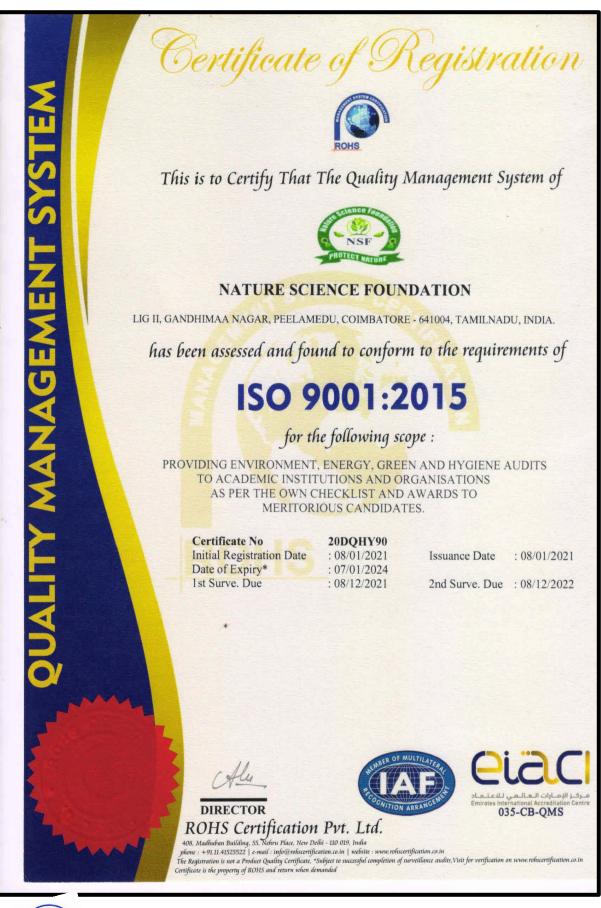
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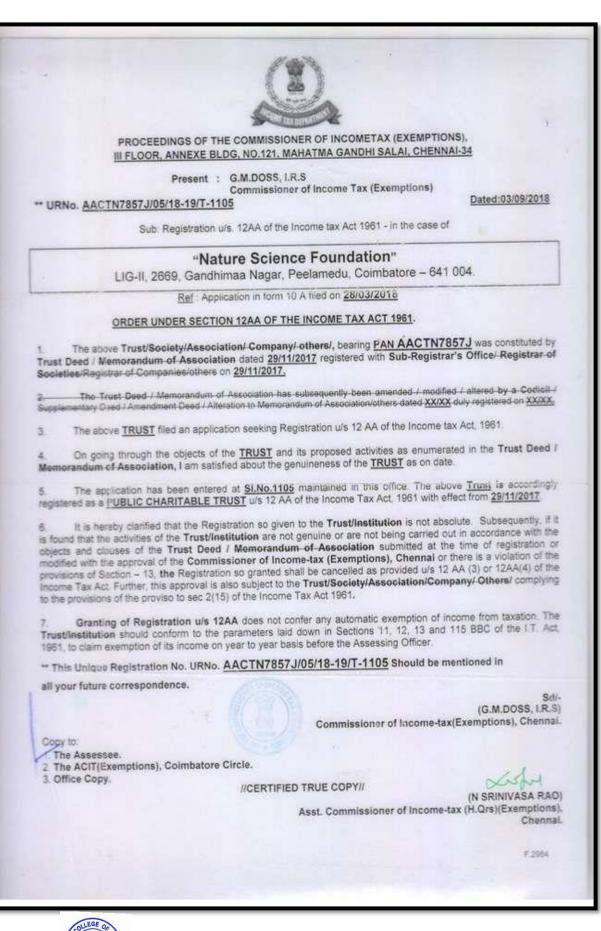


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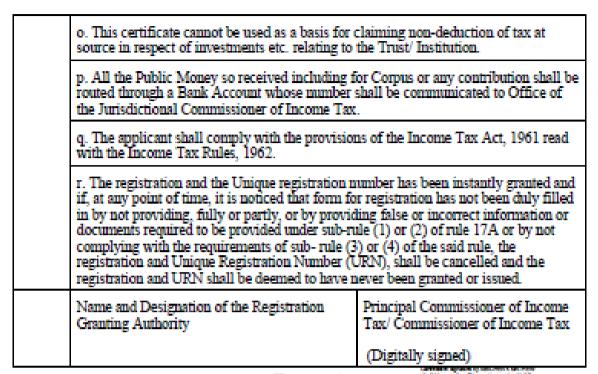
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4	Application Number	739995830271021			
5	Unique Registration Number	AACTN7857JE20215			
6	Section/sub-section/clause/sub-clause/proviso in which registration is being granted	01-Sub clause (i) of clause (ac) of sub -section (1) of section 12A			
7	Date of registration 03-11-2021				
8	Assessment year or years for which the trust or institution is registered From AY 2022-23 to AY 2026- 2027				
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