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NOTICE

Sub: Publication of Prospectus for Three Month Duration Training Programme in Industrial Health called "Associate Fellow of Industrial Health" to be conducted by Inspectorate of Factories & Boilers, Altinho, Panaji, Goa from 01.04.2025 to 30.06.2025 – req.

As approved by the Government of Goa, the prospectus for Three Months Duration Training Programme in Industrial Health called "**Associate Fellow of Industrial Health**" to be conducted by Inspectorate of Factories & Boilers, Altinho, Panaji, Goa from 01.04.2025 to 30.06.2025 is hereby published on date 13.01.2025.

Said training programme is in accordance with the competency based course curriculum and guidelines issued by the Director General of Factory Advice Services and Labour Institutes (DGFASLI), Mumbai under Ministry of Labour and Employment, Government of India.

(Anant S. Pangam)

Chief Inspector of Factories & Boilers

Copy to:-

1. Naresh S. Fadte, Medical Inspector of Factories, Altinho, Panaji.
2. Office Copy.



**GOVERNMENT OF GOA
INSPECTORATE OF FACTORIES
AND BOILERS**

PROSPECTUS AFIH 2025



**DATE OF PUBLICATION
OF PROSPECTUS
13/01/2025**

**LAST DATE FOR RECEIPT
OF APPLICATION FORM
14/02/2025**

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Associate Fellow of Industrial Health (AFIH)



GOVERNMENT OF GOA
INSPECTORATE OF FACTORIES AND BOILERS

CURRICULUM & PROSPECTUS
OF
ASSOCIATE FELLOW OF INDUSTRIAL HEALTH (AFIH)
(Three Months Duration Training Programme in Industrial Health)

CONDUCTED AT

INSPECTORATE OF FACTORIES AND
BOILERS ALTINHO, PANAJI, GOA

FOR THE

ACADEMIC YEAR 2025

(01/04/2025 to 30/06/2025)

(THIS CURRICULUM IS IN ACCORDANCE WITH THE COMPETENCY BASED COURSE CURRICULUM AND GUIDELINES FOR THE TRAINING PROGRAMME PUBLISHED BY DGFASLI, AVAILABLE ON THE DGFASLI WEBSITE (<https://bit.ly/afih-2024-dgfasli>) AND APPROVED BY THE GOVERNEMENT OF GOA)

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PREFACE

The significance of the training program on industrial health for doctors lies in its capacity to enhance their expertise and knowledge, equipping them with the necessary skills to address and manage health challenges specific to industrial environments. Three Month Duration Training Programme in Industrial Health will enable Indian registered medical Doctor of Modern Medicine to become a medical officer who is considered as competent occupational health physician in different industrial establishments. Upon successful completion of the training program, participants will be granted the title of Associate Fellow in Industrial Health, accompanied by a certificate.

It is three months, fulltime, regular, offline training programme consisting of lectures series, laboratory work, practical works, demonstration & tutorial, educational / industry visit, speciality clinical exposure and project work. The practical, tutorial, demonstration activities are integral components of the day-to-day course curriculum with the involvement of multiple disciplines including Industrial Medicine, Industrial Hygiene, Safety, Staff Training and Productivity, Human Physiology, Industrial Psychology, etc. Industrial Medicine and Industrial Hygiene laboratories and practical, field visit to the industries and to their occupational health centres to understand the existing occupational health system are also the basic and essential components of the course curriculum.

The objectives of the course are to enable the doctors

- To identify and manage the occupational health disorders / occupational diseases encountered in various industries in the country and to manage the industrial injuries, accidents, illnesses caused by chemical intoxication, in general and in hazardous process industry in particular.
- To suggest preventive and control measures of such occupational health problems.
- To advise, supervise and participate in the national and international programmes on occupational health of industrial workers, improving productivity and prosperity.

The course was introduced in the year 1992 at the Central Labour Institute, Mumbai.

The underlying concept of competency – i.e., the habitual and consistent use of knowledge, technical skills, clinical reasoning, communication, emotions, values and reflection in daily practice for the benefit of the individual (workers) and the community (industry) being served. Competency based course curriculum ensures that the training participants should consistently demonstrate the desired behaviour throughout their professional carrier rather than only during the final examination. The new competency-based course curriculum of the AFIH course has been designed to meet the requirements of the industries at national and international level with emphasis on sustainable development.

PROGRAMME GOALS



The goals of this Certificate training programme in Industrial Health namely AFIH are:

- To train groups of medical personnel in Occupational and Environmental Health issues
- To identify/recognize Occupational and/or Environmental Health related problems, undertake investigations and formulate remedial/control measures.
- To provide regular update about recent advances in the field.
- To create skilled medical manpower in the area of Occupational Health management for betterment and upliftment of health and wellbeing of the community in general and industrial workers in particular.

SPECIFIC LEARNING OBJECTIVES

The AFIH course is to produce a competent medical professional who will be able to:

- Apply the skills of a trained medical practitioner to:
 - ➔ Diagnose and manage disease and injury in relation to occupation
 - ➔ Determine the relationship between health and fitness to work
 - ➔ Advise on the effect of major contemporary health issues in workplaces
- Conduct workplace and preliminary environmental assessments in order to recognise, evaluate and control physical, chemical, biological, design-related and psychosocial hazards
- Retrieve, critically appraise and disseminate occupational and environmental health & safety information in readily understandable terms
- Apply management skills in order to:
 - ➔ Coordinate and manage occupational and environmental health and safety programs, including health surveillance
 - ➔ Effect relevant change in workplaces
 - ➔ Negotiate and resolve conflict relating to occupational and environmental health and safety issues
- Communicate effectively in order to secure the cooperation of management, employees & colleagues in the provision of a safe and healthy workplace
- Be an advocate for health in workplaces and the broader community
- Interpret the legislative, regulatory, and medico-legal aspects of occupational & environmental health and safety and be able to apply these in practice
- Design, implement and manage a vocational rehabilitation program in the workplace, provide on-hand practical training to recognise health problems related to occupation, confirm the diagnosis and suggest remedial measures, assess the factors responsible for the causation of the health problems in working & general environment conditions
- Design, conduct, implement and evaluate preventive strategies in workplaces impart training in systematic collection of information, compilation and presentation of data, storage, record keeping and retrieval of data in respect of each worker.
- Participate in continuing professional development in order to respond to changes in workplaces and keep abreast of the latest developments on occupational and environmental medicine, and health and safety issues
- Practical knowledge in computer application and drawing valid conclusions by applying appropriate statistical methodology.
- Develop basic skills in public relations, health education and public awareness programme through effective communication and information technology.

SUBJECT SPECIFIC COMPETENCIES

At the end of the course, the delegates should have acquired knowledge in the following:

A. Cognitive Domain

1. Basic knowledge on the structure of the different organ systems of human body, their functions and response to adverse occupational / environmental conditions.
2. Applied aspects of Occupational and Environmental Health.
3. Occupational / Environmental Health Epidemiology and biostatistics.
4. Occupational / Environmental Health disorders and diseases.
5. Biochemical, microbiological, and pathological aspects of Occupational Health
6. Toxicological aspects of Occupational / Environmental exposures.
7. Work physiology – Ergonomics, Biomechanics, and stressors.
8. Basic understanding of Industrial Management, Industrial Hygiene, and Industrial safety
9. Legislation related to Occupational health and safety.
10. Recent Advancement in the field of Occupational Health, Hygiene and Safety

B. Affective Domain:

1. The AFIH delegates should be able to function as a part of a team, develop an attitude of cooperation and healthy interact with the workers, occupiers, management, law and order enforcement agencies and other colleagues to provide the best possible occupational service in the industry
2. The AFIH delegates should always adopt ethical principles and maintain proper etiquette in dealings with workers, patients, relatives, and other health personnel and to respect the rights of the workers/patient including the right to information and second opinion.
3. The AFIH delegates should develop communication skills to prepare reports and professional opinion as well as to interact with workers, patients, peers and paramedical staff, occupiers, management, law and order enforcement agencies in a professional way.

C. Psychomotor domain

1. Demonstrate clinical skills of preparing case history, examination, interpretation of laboratory results, provisional diagnosis, and medical management of occupational diseases
2. Conduct pre-medical examination, periodic medical examination and exit medical examination and necessary certification
3. Conduct epidemiological studies and surveys for assessment of health & morbidity profile of the workers, determinants of diseases, assessment of health needs, diseases surveillance, and Planning and implementation of prevention and control measures
4. Do data collection, compilation, tabular and graphical presentation, analysis and interpretation, applying appropriate statistical tests, using computer-based application.

TIME MANAGEMENT

- One Working Day: 09.45 AM – 05.45 PM
- Number of Sessions per Working Day: 5
- Duration of One Session: 1 Hrs and 15 Minutes (Min)/ 1 Hrs and 30 Minutes (Max)
- Lecture, Tutorial and Practical Training: 40 Working Days (200 Sessions)
- Project Work: 10 Working Days (50 Sessions). The project work is an essential component of the curriculum, the AFIH delegates should be informed and sensitized about it from the very beginning of the course.
- Educational/Industrial Visits/ Specialty Clinical Exposure: 10 Working Days (50 Sessions)
- Total Effective Course Duration: 60 Working Days (300 Sessions) [Min-375 Learning Hours]

STUDY SCHEME

DOMAIN	NUMBER OF SESSIONS			
	LECTURE/GROUP DISCUSSION/PRESENTATION (L)	TUTORIAL/ DEMONSTRATION	PRACTICAL	TOTAL (200+50+50)
A) Fundamentals of Industry and Industrial Managements	10	-	-	10
B) Occupational & Environmental Health	85	10	15	120
C) Industrial Safety	15	5	-	20
D) Industrial Hygiene	15	5	10	30
E) OSH Statutes and Standards	20	-	-	20
Lectures, Tutorial and Practical Training	145	20	35	200
Project Work	50			50
Educational/ Industrial Visits & Speciality Clinical Exposure	50			50

COURSE CONTENTS IN DETAILS

A. FUNDAMENTALS OF INDUSTRY AND INDUSTRIAL MANAGEMENT:

L-10, T-0, P-0

ALLOTTED SESSIONS : 15 SESSIONS		
LECTURE/GROUP DISCUSSION/ PRESENTATION	TUTORIAL/ DEMONSTRATION	PRACTICAL
10	0	0

1. FUNDAMENTAL OF INDUSTRY:

L-5, T-0, P-0

What is Industry , its types and Sectors, Industries of India, Industrial Economics, Indices (GDP/GNP etc), The need for industries in country's development, The Factors of Production in industries (Labour, Land, Capital, Enterprise), What is Labour, Its types, issues, solutions, Organized and Unorganized labour issues, Migrant Workers, Seasonal Workers, Gig Workers, Industry as Organization, Its Hierarchy, the need of doctors in industry, Basic knowledge on the functioning of the different Industries, Interrelation for OSH with Industry's department of Safety, HR, Welfare, Commerce, Market, Trade Unions, Govt agencies, Community around industry, Importance of Occupational Health for Sustainable Development in Industries, Industry 1.0/2.0/3.0/4.0/5.0, Effect of technical advancement in industrial hazards.

2. INDUSTRIAL MANAGEMENT FOR OCCUPATIONAL SAFETY AND HEALTH:

L-5, T-0, P-0

General principles of Management, Management Theories, Components: Planning, Organizing, Staffing, Directing, Coordinating, Reporting and Budgeting, Management Structure, Roles and Responsibilities, Authority, Information flow, Reporting Mechanism, Delegation of Power, Public Relation, Concept of productivity, Concepts of Material Management, inventory control & techniques, Concept of Quality, PDCA Cycle, principles of Kaizen, Total Quality Management, Assessment of training needs, Design & development of training programmes, Training methods and strategies, Training programmes for new entrants, Evaluation of training programmes, Communication, Principles, tools and techniques of Effective Communication, IEC & BCC, Occupational Health Audit, Incentives, motivation, leadership traits, skill and types

B. OCCUPATIONAL AND ENVIRONMENTAL HEALTH:

L-85, T-10, P-25

ALLOTTED SESSIONS: 110 SESSIONS		
LECTURE (L) /GROUP DISCUSSION/ PRESENTATION	TUTORIAL (T)/ DEMONSTRATION	PRACTICAL
85	10	25

1. Concepts of Health & Diseases and History of Occupational Health:

Definitions, Determinants of Health, Concepts of Health and Diseases, Basic socio-economic and demographic factors pertinent to occupational health, Occupational Sociology, History and development of Occupational Health, International and National Organisations of OSH (MoL&E, DGFASLI, AIIH&PH, ILO, WHO, CDC, ICMR-NIOH, ICOH, NIOSH etc), ILO Conventions, Recommendations, Ratifications, Status of occupational health globally and in India, Sustainable Development Goals, Epidemiology, Epidemiological triad, Theory of Disease Causation, Multifactorial Causation of Occupational Diseases, Association and Causal Relationship, Level of Prevention and Mode of Interventions, Role of Nutrition in Occupational Health. Etc

2. Healthcare Delivery System for Community and Industry:

Principle and Elements of Primary Health Care, Primary Health Care Approach in Occupational Health (Basic Occupational Health Service), Health Service in India, Role of Governments, Employers, Trade Unions and Employees in OHS, Reportable Diseases and Notifiable Diseases, Functioning of Occupational Health Centre, First Aid Services in Industries, Ambulance service, Medical emergency response & planning, Role and Responsibilities during in Onsite & Offsite Emergencies, Triage and Reverse Triage, Health Programmes for Prevention of Communicable and Non-Communicable diseases, Hearing Conservation Programme, Prevention of Addiction, Rehabilitation, etc

3. Research Methodology and Biostatistics in Occupational Health:

Methods of occupational health studies-descriptive studies, analytical studies, case control and cohort studies, experimental studies, Preparation of questionnaire, Measurements of Mortality and Morbidity: Incidence, prevalence, mortality rate, morbidity rate, man-days lost, absenteeism rate, sampling, sample size, sampling methods, standardization, concept of normal distribution, descriptive statics, inferential statistics, mean, median, mode, standard deviation, inter quartile range, concept of p value, significance testing, Chi² testing, t- tests, correlation, Application of computers and statistical software of occupational health data analysis, representation of the research results in tables and diagrams, preparation of reports, Reference management, Plagiarism, Research Publication, Important Database and Repository for Occupational health Practice

4. Screening and Diagnosis for Occupational Health:

Concept of Screening Tests and Diagnostics Tests, Sensitivity, Specificity, Accuracy, Precision, Positive Predictive Value, Negative Predictive Value, Biomonitoring and exposure assessment for occupational diseases, Occupational Toxicology, Occupational Health Surveillance, Different Diagnostics Modalities in Occupational Health, Imaging Modalities for Occupational Health, Evidence Based Decision Making for Occupational Health Practice, Pre-Employment Medical Examination, Periodic Medical Examination, Pre-Retirement/Exit Medical Examination, Special Medical Examination, Maintenance of health registers and records, Medical Certification to employees (employment, sickness, injuries, return to work) etc

5. Management of Occupational Disorders, Injuries, and Illness:

Medical Management of Diseases Caused by Physical factors or Agents: Heat, Noise, Vibration, Humidity, compressed or decompressed Air, Electricity, Radiation, Electromagnetic Waves, Work at Height, Work at High Altitude, Work under Water, Medical Management of Diseases Caused by Biological Agents: Anthrax, Brucellosis, Leptospirosis, Tetanus, Tuberculosis, Hepatitis, HIV, Fungal Infections, Occupational diseases by target organ systems: Occupational Lung Diseases, Occupational Skin Disorder, Occupational Musculo-Skeletal Disorders, Occupational Cancers, Occupational Eye Disorders, behavioural toxicology, Occupational Injuries and Illness Classification, Management of Occupational Injuries and Emergencies, BLS, ACLS, Management of Insect, Animal and Snake Bite, Disability Assessment, etc

6. Industrial Toxicology (Chemical Health Hazards & its Management)

Toxicokinetics – absorption, metabolism, retention, entoxification, detoxification, excretion of toxic chemicals (xenobiotics), toxicology related to different systems/organs, acute verses chronic effects, relation between work place exposure and health effects.

Metals in Industry like Arsenic & its compounds, Beryllium & its compounds, Cadmium & its compounds, Chromium & its compounds, Cobalt & its compounds, Copper & its compounds, Fluoride, Lead & its compounds, Manganese, Mercury, Nickel & its compounds, Phosphorus, Uranium.

Gas, Vapor & Mist in Industry like Carbon Monoxide, Hydrogen Cyanide, Hydrogen Sulphide, Chlorine, Phosgene, Ammonia, Phosphine, Methyl Isocyanate, Sulphuric Acid.

Organic Chemicals like Benzene, Toluene, Carbon Disulphide, Vinyl Chloride, Methylene Chloride (Dichloromethane).

Pesticides & its toxicity

7. Environmental Health:

Introduction and definitions in Environmental Health, Air Pollution and Workers Health, Air Quality Index, Water Pollution, Environmental Sanitation, Food Safety, Pests and Pesticides, General sanitation, purification of water, water quality assessment, Criteria of Potable Wholesome Drinking water, drinking water supply, Solid waste management, Bio-Medical Waste Management, Environmental Management System, etc

8. Work Physiology, Ergonomics, and Industrial Psychology:

Work Physiology, Physical fitness, Heat Stress, Fundamentals of Biomechanics, Introduction to ergonomics, cumulative trauma disorders, stress performance, application of ergonomics in occupational health, anthropometry, principles of work station designing, Introduction to industrial psychology, occupational stress & its management, shift work, Occupational Mental and Neuro-behavioural disorders, occupational health disorders of psychological origin, etc

9. Important National Health Programmes :

Brief Introduction to National Health Mission (NHM), Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY), and Important National Programme for TB, HIV, Vector Borne

Diseases, Integrated Disease Surveillance Programme (IDSP), National Programme for prevention & Control of Cancer, Diabetes, Cardiovascular Diseases & stroke (NPCDCS), National Mental Health Programme.

10. Recent Advancement in Occupational Health

Recent advances in Plastic Surgery (Burns, Crush Injury, Amputation, etc.), Neuro Surgery (Management of Head Injury and Spine injury, fall from height), Neurology, Radio-diagnostic and Interventional Radiology, Forensic Medicine (Interpretation of Occupational Injuries, Occupational Toxicology (Acute & Chronic) with reference to legal Aspect.)

Adult Immunization, One Health Approach, Immunologic and genetic biomarkers in occupational health practice, Application of Artificial Intelligence in Occupational Health Practice, Aging and Work, Women at Work, Nanotechnology and Occupational Health, Industrial Automation and Occupational Health, Occupational Health Information Management System, Ethics in Occupational Health, Green House Gases, Carbon footprint, Climate Changes, etc.

C. INDUSTRIAL SAFETY:

L-15, T-5, P-0

ALLOTTED SESSIONS: 20 SESSIONS		
LECTURE (L) /GROUP DISCUSSION/ PRESENTATION	TUTORIAL (T)/ DEMONSTRATION	PRACTICAL (P)
15	5	0

- a. Definition, Importance, Applicability, Accident causation, Accident and Injury Prevention, safety committee, Control of industrial heat, ventilation, noise, vibration, illumination & color, Radiation Safety, Fire Safety, Electrical Safety, Work Permit System, Safety during Work at Height and Confined Space, Accident investigation & Reporting, Fundamentals of Safety Audit, Introduction to Behavioral Based Safety (BBS), Hazard Identification, Risk Assessment & Mitigation (HIRAM), Case studies of following major accidents - Bhopal, Mexico, Flixborough, Seveso, Chernobyl and Feyzin disasters, etc.
- b. Industrial Processes (Manufacturing Processes)/Fundamentals.

D. INDUSTRIAL HYGIENE:

L-15, T-5, P-10

Introduction to Industrial hygiene, organizing Industrial hygiene service, Hierarchy of Control, Concepts of safe working limits (TLV –TWA, STEL, PEL, REL, BEI, IDLH, LC 50, LD50, etc), MSDS, Workplace Airborne contaminants and monitoring, Assessment and monitoring of Industrial ventilation, heat & heat stress indices, humidity, noise, illumination & color, vibration, radiation, Respiratory and Non-Respiratory Personal Protective Equipment-Types, Standards and Selection

ALLOTTED SESSIONS: 30 SESSIONS		
LECTURE (L) /GROUP DISCUSSION/ PRESENTATION	TUTORIAL (T)/ DEMONSTRATION	PRACTICAL (P)
15	5	10

E. OCCUPATIONAL SAFETY & HEALTH STATUTES & STANDARDS:

L-20, T-0, P-0

ALLOTTED SESSIONS: 20 SESSIONS		
LECTURE (L) /GROUP DISCUSSION/ PRESENTATION	TUTORIAL (T)/ DEMONSTRATION	PRACTICAL (P)
15	5	0

National Policy on OSH, Factories Act 1948 and The Factories Rules, The Dock Workers (Safety, Health & Welfare) Act and Regulations, Building and other construction work Act & Rules, Environmental Protection Act 1986-MSIHC Rules, CIMAH Rules, ESI Act, The Mines Act, Employees Compensation Act, Maternity Benefit Act, Insecticides Act, The Child and Adolescent Labour (Prohibition & Regulation) Act and Introduction to New Labour Codes, Introduction to National and International Standards, BIS, OISD, ISO, OSHA, NIOSH

PROJECT WORK

Project work is the essential component of the training programme. The Project work shall be original work in the field of occupational health domain involving workers as study participants in registered Factory, Mines, Dock Works, Construction Work and Plantation Work. Project work may include secondary data analysis of occupational health domain in the above-mentioned establishments. Narrative reviews, Systematic reviews, and case reports, etc. will not be considered as Project Work. The Project work should commence from the first working day of the third month of the programme in all the institutions all over India and duration shall be 10 working days. The project work shall be duly approved by the medical faculty of the respective institute. There shall not be any violation of ethical principles of biomedical and health research, and it is to be ensured by the respective institution. The final project work report should be with in 5000 words and printed hardbound copy with black cover and golden embossing. The project report shall be duly checked, approved, and duly signed by the medical faculty of the respective institute. At least two copies of the project report should be prepared out of which one shall be submitted to the Institute during final examination.

The Project Work should consist of following sections:

I. Title:

Times New Roman, 14 font size, Bold, Line Spacing 1.5, Justify

II. Structured Abstract (Max 300 Words):

Introduction, Methodology, Result and Discussion. Times New Roman, 12 font size, Line Spacing 1.5, Justify

III. Keywords (Max 5 Keywords in MeSH Terminology):

Times New Roman, 12 font size, Italic

IV. Introduction:

Times New Roman, 12 font size, Line Spacing 1.5, Justify, Single Column, A-4, Equations, Tables and Figures (colored) shall be numbered chronologically, starting from Introduction to Conclusion. In text citation as numbers in chronologically in square brackets [] as cross linked to corresponding reference

V. Review of Literature:

Times New Roman, 12 font size, Line Spacing 1.5, Justify, Single Column, A-4

VI. Materials and Methods

Times New Roman, 12 font size, Line Spacing 1.5, Justify, Single Column, A-4

VII. Results and Analysis

Times New Roman, 12 font size, Line Spacing 1.5, Justify, Single Column, A-4

VIII. Discussion

Times New Roman, 12 font size, Line Spacing 1.5, Justify, Single Column, A-4

IX. Conclusion

Times New Roman, 12 font size, Line Spacing 1.5, Justify, Single Column, A-4

X. References:

In Vancouver format with in text citation as square brackets []

Plagiarism Prevention: The project report prior to submission should be checked by the candidate for plagiarism. The similarity content should not exceed 10% & not more than 2% from any single source. In this regard, a self-declaration by the candidate shall be included in the report.

EDUCATIONAL/INDUSTRIAL VISITS PROFILE

Educational/Industrial Visits: 30 Sessions

At least 9 field visits must be conducted in registered factories specially in the industries involving hazardous process as mentioned in the First Schedule of the Factories Act 1948, Construction sites, dock works (if nearby), mines (if nearby), Plantation work (if nearby) to study occupational health hazards, control measures and the functioning of occupational health services there. One educational visit may be conducted in any specialized or advanced center for management of occupational health problems or dealing with occupational rehabilitation services or occupational toxicity or occupational research organization.

As a part of said educational, industrial and organizations visit, following industries will be visited.

1. M/s Pentair Water India Pvt. Ltd., Verna, Goa.
2. M/s Himgiri Castings Pvt. Ltd., Kundaim, Goa.
3. M/s Procter & Gamble Hygiene & Health Care Ltd., Kundaim, Goa
4. M/s Putzmeister Concrete Machines Ltd., Verna, Goa.
5. M/s Vedanta Limited, Amona, Goa.
6. M/s Paradeep Phosphates Limited, Zuarinagar, Goa.
7. M/s Hindustan Coca-Cola Beverages Pvt. Ltd., Verna, Goa.
8. M/s Goa Glass Fiber Ltd., Colvale, Bardez, Goa.
9. M/s Alcon Cement Company Pvt. Ltd., Surla, Goa
10. M/s Berger Paints India Limited, Kundaim, Goa
11. M/s MRF Limited, Usgao, Goa.
12. M/s Berger Paints India Limited, Kundaim, Goa.
13. M/s Cipla Limited, Verna, Goa.
14. M/s Goa Shipyard Limited, Vasco, Goa.
15. M/s Tata Consultancy Services Ltd., Karaswada, Goa.
16. Skill center visit at Goa Medical College, Bambolim, Goa.

PROFILE OF INDUSTRIES TO BE VISITED

1. M/s Pentair Water India Pvt. Ltd., Verna, Goa.



CODELINE

Overview

CodeLine pressure vessels are used for reverse osmosis and ultrafiltration processes. They are built to maximize the performance of water treatment and purification systems. The vessels are used in industrial, commercial and municipal water treatment applications across the world. Our extensive pressure vessel portfolio guarantees the right specification for each application.

The pressure vessels are widely used for diverse water applications, from industrial water treatment to wastewater treatment, from sea water reverse osmosis to water treatment processes in the Oil & Gas sector.

Product Portfolio

CodeLine pressure vessels are wound using state of art filament winding process.

Glass Fiber Roving, Epoxy Resin & Epoxy Hardener being the prime raw material.

CodeLine Pressure vessels ranges from diameter 2.5” to 16” and the length accommodates 1 membrane to 8 membranes

Pressure rating from 90 psi to 1500 psi and Temperature Minimum 20oF to Maximum 190oF

CodeLine Pressure vessels are available as ‘End entry’ and ‘Side entry’ having nozzle ranging from 1” to 4”



COMPOSITE

Overview

Composite Pressure Vessels are used in Industrial and commercial water treatment and storage

100% Composite Fiberglass construction offers outstanding performance and durability in harsh chemical environment and requires little or no maintenance

Product Portfolio

Single piece seamless chemical resistance LLDPE liner produced using rotomolding technique, on which filament winding is carried out with glass fiber reinforced epoxy laminate.



POLYGLASS

Overview

Polyglass Tanks are used for residential and light commercial water softener / filtration application

These vessels are deigned to provide years of worry -free performance

Product Portfolio

Single piece seamless chemical resistance HDPE liner produced using Blow molding technology on which filament winding is carried out with glass fiber and Epoxy Resin.



2. M/s Himgiri Castings Pvt. Ltd., Kundaim, Goa.

Himcast was founded in 1995 with the objective of producing top-grade Grey and Ductile Iron Castings for various engineering needs. Over the years, our fastidious approach to deliver nothing but the best has fuelled our growth from a modest Indian company to one that commands respect internationally. Our milestones include an expanded manufacturing capacity and a workforce that has more than doubled during this time. Currently, we have 3 manufacturing plants over 2 locations with 4 High Pressure Moulding Lines, a total capacity of 40,000 MT tons and in-house machining & painting capabilities. Even as you read this, our 1200+ strong workforce is dutifully scanning a range of 1000+ products across water-works, fire-fighting, engineering, infrastructure, automobile industries to ensure 100% perfection. Ultimately, no matter how far we've come, the one thing that hasn't changed is our commitment to delivering the best and to moulding the future.



Our Purpose

We manufacture & export iron castings as per customer needs with top focus on quality, efficiency, safety and innovation.

Our Target

We plan to drive growth through diversification with a strong focus on customer satisfaction.

We aim to be a one-stop shop for customers with fully finished products under one roof.

We aspire to achieve an output exceeding 50,000MT/ annum in the next 5 years.

3. M/s Procter & Gamble Hygiene & Health Care Ltd, Kundaim, Goa

Procter & Gamble (P&G) operates a Fem Care unit in Goa, at Kundaim Goa India, as part of its global commitment to providing high-quality feminine care products to women worldwide. The Fem Care unit in Goa is dedicated to the manufacturing and supply of feminine hygiene products that cater to the unique needs of women.

The Fem Care unit in Goa is equipped with state-of-the-art facilities and adheres to strict quality control measures to ensure the production of safe and reliable feminine care products. P&G's commitment to innovation is reflected in its continuous research and development efforts to deliver innovative solutions that enhance the comfort and confidence of women.

The unit produces sanitary pads, under well-known brand Whisper. These products are designed to provide maximum protection, absorption, and comfort, allowing women to stay active and confident throughout their menstrual cycle. At Kundaim we have multiple lines to cater to different SKUs as per market requirements. All the converter lines convert the Raw Material into Sanitary Pads that are automatically packed in the relevant SKU sizes. The entire process is touchless and the lines are high

speed with different capacities.

P&G Goa's Fem Care unit places a strong emphasis on sustainability and environmental responsibility. The manufacturing processes are designed to minimize the ecological footprint, reduce waste generation, and conserve resources. P&G is dedicated to promoting sustainable practices throughout the entire product lifecycle.

Beyond its manufacturing operations, P&G Goa actively engages in community initiatives under the SHIKSHA program. The company collaborates with local organizations and NGOs to create awareness about menstrual hygiene, provide education and support, and promote access to quality feminine care

products for women in need. We also partner with local NGO such as MATRUCHAYA supporting the education for the underprivileged children.

P&G Goa's Fem Care unit plays a vital role in P&G's mission to improve the lives of women by providing them with safe, reliable, and innovative feminine care products. The unit's commitment to quality, sustainability, and social responsibility underscores P&G's dedication to making a positive impact on the lives of women and the communities in which it operates.



PROFILE OF INDUSTRIES TO BE VISITED

4. M/s Putzmeister Concrete Machines Ltd., Verna, Goa.

Putzmeister is a worldwide leading solution provider for pumping, mixing and placing concrete, mortar and industrial solids. We are well known for quality, durability, and innovation of our products and services. Together with our parent company Sany Heavy Industries, we are amongst the world leaders in our business. The Putzmeister Group, headquartered in Germany, develops, produces, and sells machinery of high technological quality like truck-mounted concrete pumps, stationary concrete pumps, truck mixer, placing booms and accessories, mixing plants and industrial equipment, machinery for tunnel applications, mortar machines, plastering machines and screed machines. Business fields include the construction industry, mining and tunnelling, large industrial projects, power plants and sewage treatment plants, as well as waste incineration plants, all over the world.

Putzmeister Concrete Machines is a wholly owned subsidiary of Putzmeister Group which serves the needs of the Indian subcontinent, apart from exporting to several Latin American, African and APAC countries. Our workforce is ~1,000 in size and we have two manufacturing facilities – one each in Goa and Pune. We serve our customers through our 40+ sales offices, 45+ service and parts locations, and 5 company-owned-and-operated workshops across key cities of the country.



STATIONARY PUMP eSmart

- RELIABILITY with in-built fault management system in case of failure
- POWERFUL TRANSMISSION provided by closed-circuit, free-flow hydraulics
- REAL-TIME STATUS can be monitored by the operator easily
- EASY TO MAINTAIN with convenient access to machine parts for cleaning
- LOW SERVICE COSTS due to fewer machine components and wear parts
- OPTIMISED OPERATIONS with minimal operation noise
- EMERGENCY STOP SWITCH to stop the machine entirely

- HIGH-PERFORMANCE reliable pumping for high-rise and long-distance projects
- SIMPLE OPERATIONS with easy to master hydraulic controls
- LIFELONG SAVINGS with long service life of wear parts and fewer components
- EASY TO MAINTAIN with convenient access to machine parts for cleaning
- LONG MACHINE LIFE with durable built quality and rugged features
- HIGH RESALE VALUE Putzmeister pumps garner the highest in-class resale value

BSA 1404HD
BSA 1405D
BSA 1406E
BSA 1407D
BSA 1407HD



STATIONARY PUMP Classic

- HIGH-PERFORMANCE reliable pumping for high-rise and long-distance projects
- SIMPLE OPERATIONS with easy to master hydraulic controls
- LIFELONG SAVINGS with long service life of wear parts and fewer components
- EASY TO MAINTAIN with convenient access to machine parts for cleaning
- LONG MACHINE LIFE with durable built quality and rugged features
- HIGH RESALE VALUE Putzmeister pumps garner the highest in-class resale value

BSA 1407D Classic



BATCHING PLANTS

- ENGINEERED for improved productivity, longer plant life
- OPTIMISED for consistent quality of output
- CONFIGURABLE for any type of job site requirement
- FULLY AUTOMATED IoT-enabled plant that can be monitored remotely
- SAFE convenient operations with easy maintenance

- SAVINGS with the Ergonic® Output Control (EOC) system
- MORE POWER with Free Flow Hydraulics (FFH)
- UNBEATABLE manoeuvrability, flexibility and reach
- OPTIMIZED and designed for safe and convenient operations
- EASE of cleaning and maintenance
- LONG SERVICE LIFE with reduced operating costs

BSF 3G-4
BSF 42-5




TRUCK-MOUNTED BOOM PUMPS


- SAVINGS with the Ergonic® Output Control (EOC) system
- MORE POWER with Free Flow Hydraulics (FFH)
- UNBEATABLE manoeuvrability, flexibility and reach
- OPTIMIZED and designed for safe and convenient operations
- EASE of cleaning and maintenance
- LONG SERVICE LIFE with reduced operating costs

BSF 3G-4
BSF 42-5

MACHINE REBURFISHMENT



BEFORE



AFTER

- DISASSEMBLY and assembly after the refurbishing procedure
- REPLACEMENT of worn-out parts with brand-new genuine spare parts
- UPGRADATION of the pumping technology to meet new norms
- MAKEOVER with the denting and painting work of machine body

PROFILE OF INDUSTRIES TO BE VISITED

Typical Operations in Factory:

Material handling operations using powered industrial trucks and EOT cranes.



Hot work activities such as welding, grinding and gas cutting in designated welding bays.



Paint booth operations.



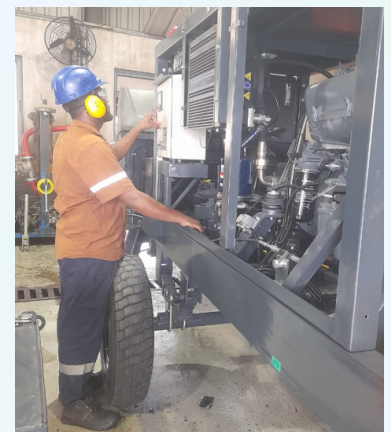
Paint booth operations.



Shot blasting operations.



Testing operations.



5. M/s Vedanta Limited, Amona, Goa



PIG IRON

Leading Manufacturer & Supplier of Pig Iron in India

Vedanta Sesa Goa Pig Iron Division is the largest merchant producer of Pig Iron in India with production capacity of 80,000 tons per month. Pig Iron Division (PID) started operating in 1992. It was the first to introduce low phosphorous foundry-grade pig iron in India. The PID has three blast furnaces, making SESA's PID the largest producer of low phosphorous pig iron in India with an installed capacity of 950000 Tones/Year. The Company also commissioned an 800,000 tones' sintering facility that would enable the PID to partially meet its iron ore requirement with sintered iron ore fines, resulting in significant cost savings and increasing efficiencies.

Features of product

Pig iron is produced from the blast furnace. The purpose of a blast furnace is to chemically reduce and physically convert iron oxides into liquid iron called 'hot metal'. The blast furnace is a huge, steel stack lined with refractory brick, where iron ore, coke and limestone are dumped into the top, and preheated air is blown into the bottom. The raw materials require 6 to 8 hours to descend to the bottom of the furnace where they become the final product of liquid slag and liquid iron. These liquid products are drained from the furnace at regular intervals. The hot air that was blown into the bottom of the furnace ascends to the top in 6 to 8 seconds after going through numerous chemical reactions. Once a blast furnace is started, it will continuously run for four to ten years with only short stops to perform planned maintenance.

Pig iron is an intermediate product and first product of Iron making reduced from Iron ore. Pig iron has a very high carbon content, typically 3.5–4.5%, [1] along with silica, Manganese, Sulphur, Phosphorus, Titanium and other trace elements.

Uses and benefits of the product:

Pig Iron comprises three main types: BASIC PIG IRON which used mainly in electric arc steelmaking, FOUNDRY PIG IRON used in mainly in the manufacture of grey iron castings in cupola furnaces, and NODULAR PIG IRON (SG GRADE) used in the manufacture of ductile iron castings. Pig iron is used for steel making, foundries, alloy making, in automotive castings and other iron based castings.

Production Capacity

Our Pig Iron Plant is strategically located at Amona, on the banks of Mandovi River, at an optimum distance of 40 kilometres from Marmagao port which gives us the dual advantage of transporting Pig Iron by road in trucks & containers as well as by riverine barges in bulk. The annual capacity of total plant is 0.95 MTPA.

Level of customisation

We produce compositions within fairly narrow ranges of specifications with the objective of optimizing customer's costs due to non-addition of additives, standardization of process parameters and minimization of rejects. We are long-term suppliers to some of the global brands & OEMs from automobile industry and some of the most reputed steel mills and foundries.

MET COKE

Leading Manufacturer & Supplier of Met Coke in India

Met Coke Division (MCD) is primarily a backward integration initiative to support the pig iron operations. The Plant is strategically located at Amona, on the banks of Mandovi River, at an optimum distance of 40 kilometres from Marmagao port which gives us the dual advantage for transportation of raw material coking coals by riverine barges from different parts of World. Met coke division has two coke oven batteries with total production capacity 0.522 Million tons per annum based on Sesa's patented Energy Recovery Coke Making Technology.

SESA's Energy Recovery Coke Making Technology is an environment-friendly technology that is characterized by low capital and operating cost, high energy recovery, capable of producing high quality metallurgical coke. This technology is available for license globally in standard modules of 0.3 MTPA with a potential to generate 21 MW of electrical energy. Developed through in-house efforts, SESA holds patents in India, Brazil and Europe for this technology. This patent is a reaffirmation of SESA's commitment to development of innovative and cutting Edge solutions.

Salient features of SESA's coke technology are:

- Cost-effective
- Clean and Enviro-friendly
- Produce High quality metallurgical coke
- Optimum waste heat recovery per ton of coke produced

Sesa Coke - Maharashtra was acquired by Vedanta in 2019. Plant has installed capacity of 108,000 Tonnes/Year through its 2 coke oven batteries and 48 ovens using best in class non recovery type coke oven tech-

nology for production. The capacity will be utilized for merchant sales.

Features of product:

Vedanta's Met coke Division, Manufacturing low ash Metallurgical coke by means of non-recovery heat recovery coke making process based on SESA's patented technology while Sesa Coke manufactures premium low ash Metallurgical coke by means of non recovery type coke oven technology.

Metallurgical coke is the costlier and main raw material for steel industries and cupola furnaces. Main raw material for coke making is metallurgical coal and it is being imported from different parts of world mainly from Australia, Russia, South Africa, USA and Indonesia.

Uses and benefits of the product:

Metallurgical coke comprises of four different grades based on size of coke:

Foundry coke (+70mm): Used mainly in cupola furnaces for melting of pig Iron to produce different castings.

Blast Furnace coke (20-80mm): Used mainly in Blast furnaces as a reduction agent to reduce Iron ore in different grades of steel products.

Nut Coke (10-25mm): Used mainly in Alloy industries as a reduction agent.

Coke Breeze (-10mm): Used mainly in Sinter plants, Cement Industries.

Level of customisation:

We offer premium quality low Ash, low Sulphur and low Phosphorus Metallurgical Coke, offering best in class coke rates in Blast furnaces and Foundry Cupolas which are mainly manufacturing automotive castings



6. M/s Paradeep Phosphates Limited, Zuarinagar, Goa



Incorporated in 1981, Paradeep Phosphates Limited (PPL) the leading player in manufacturing, distribution, trading, and sales of a variety of fertilisers, soil nutrients and industrial products in India. With two manufacturing facilities, one at Paradeep in Odisha and other at Zuarinagar in Goa, both strategically located near the ports, which endow logistical advantages to the company. The Goa plant was operational since 1973 (as ZUARI AGRO CHEMICALS), engaged in manufacturing nitrogenous and complex fertilisers. The Goa unit became part of M/s. Paradeep Phosphates Limited with a business transfer agreement in the month of June 2022. Our diverse product portfolio consists of Urea, Di-ammonium Phosphate (DAP), several grades of NPK, Muriate of Potash (MoP), and Zypmite, making it possible for farmers to provide balanced fertilisation to the crops, with a supply of essential plant nutrients for optimum plant growth, yield, and quality. Our brand name 'Jai Kisaan' and 'Navratna' are symbol of trust among farmers.

We aspire to become an integral part of India's prosperity journey through our customised solutions for farmers.

BRIEF DESCRIPTION OF PROCESS PLANTS

at GOA UNIT

1.3.1 Ammonia plant

Feed Natural Gas along with steam, make-up gas and process air reformed in primary and secondary reformer to produce mixture of CO, CO₂, H₂, CH₄, N₂ and Ar. Reformed gas, after recovery of heat is fed to Shift conversion section where CO is converted to CO₂. CO₂ is removed from process gas in CO₂ re-

moval section. Remaining traces of CO₂ and CO are converted to methane in Methanator section. This process gas is compressed and mixed with recycle gas in synthesis section and fed to synthesis converter to produce ammonia. Converter outlet process gas containing ammonia is cooled in synthesis section using ammonia refrigeration compressor and product ammonia is separated.

Imported ammonia is transported in insulated tankers to ammonia unloading facility at Factory site. We also have the facility for ammonia unloading from road tankers from where the liquid ammonia is sent to Horton sphere for storage.

1.3.2 Urea Plant

CO₂, liquid ammonia and recycle carbamate solution are pressurized to high pressure (230 Kg/cm²g) and fed to Urea reactor. Synthesis of Urea takes place as the reactants flow up the reactor. At the exit of reactor, we have urea, excess ammonia, unconverted carbamate and water. Excess ammonia and unconverted carbamate from the stream are separated in four stages of decomposition at 16.5 Kg/cm²g, 2.5 Kg/cm²g, 0.3 Kg/cm²g and atmospheric pressure and recovered /recycled. Urea solution is further concentrated and urea crystals formed are separated using centrifuges. Urea crystals are dried, conveyed to the top of prilling tower, remelted and melt is distributed across the cross section of prilling tower in the form of fine droplets. As the droplets descend down the prilling tower they contact the air rising through the tower and pills are formed. Prills are further cooled in fluidized bed at the bottom of the cooling tower and sent

to bagging plant/bulk storage.

1.3.3 NPK-A Plant

Imported phosphoric acid is pumped from ship to one of the three tanks each having a capacity of 7,500 MT installed at Vasco. Phosphoric acid from Vasco Installation is transferred to Raw Material handling by road tankers. The phosphoric acid from road tankers is unloaded in three tanks at site, two of capacity of 5000 MT and one of 2500 MT. From these tanks the phosphoric acid is pumped to NPK-A and NPK-B plants.

Ammonia and phosphoric acid are reacted in a Pre-neutralizer. Resulting slurry is sprayed on a bed of rolling/cascading recycle solids and subjected to granulation in a rotating drum which has a rolling bed of solids consisting of Urea, KCl, and recycle material. The granular material is dried in rotary co-current dryer, sieved to segregate the product size, cooled and the product is sent for bagging. Crushed oversize material and undersize material from the screens is recycled back to the granulator. The gaseous streams are treated in cyclones to remove particulates and then in wet venturi scrubbers before discharging through the stack.

Muriate of Potash (MOP) is transferred from Harbour to plant site by tippers and stored in potash storage.

1.3.4 NPK-B Plant

Ammonia and phosphoric acid are reacted in a Pre-neutralizer. Resulting slurry is sprayed on a bed of rolling/cascading recycle solids and subjected to granulation in a rotating drum which has a rolling bed of solids consisting of Urea, KCl, and recycle material.

The granular material is dried in rotary co-current dryer, sieved to segregate the product size, cooled and the product is sent for bagging. Crushed oversize material and undersize material from the screens is recycled back to the granulator. The gaseous streams are treated in cyclones to remove particulates and then in wet venturi scrubbers before discharging through the stack.

1.3.5 Water Treatment Plant

We receive 10000 M3 per day of Raw water from the Water Resource Department (WRD) of the government of Goa. Water is used as make up water for cooling towers, for steam generation, for firefighting and drinking purpose. The stream of water going for generation of DM water is passed through of filters, cation and anion columns and polishers.

1.3.8 Steam Generation and Captive Power Generation Plant

There are 3 boilers each of 70 MT per hour of steam generation capacity operating at 105-kg/cm²g pressure and 4900 C temperatures. Normally 2 boilers are in operation and one is kept stand-by. SX steam produced is used for generation of captive power. There is a turbo generator or producing 7.5 MW of electric power sufficient to keep all the critical equipment in Ammonia, Urea and Utilities plants in running condition. Natural gas is used as fuel in boilers.

D/G set of 6.5 MW to meet the requirement of NPK-A, NPK-B, PH, Auxiliary facility etc. is commissioned in 1999. LSHS will be received in road tankers and the tankers will be unloaded in a tank located in Utilities & LSHS will then be supplied to DG set.



7. M/s Hindustan Petroleum Corporation Limited, Kundaim, Goa

Details about the process

Hindustan Petroleum Corporation Limited (HPCL) is Government of India enterprise. It is engaged in the activity of refining and marketing of petroleum products. It caters various petroleum products such as petrol, diesel, lubricants, LPG, furnace oil, etc. across India for domestic as well as commercial purposes. The company has a vast network across India comprising of terminals, LPG bottling plants, aviation service stations, pipeline networks, inland relay depots and retail outlets. It has one such facility of LPG Bottling in Goa state. The said LPG bottling plant is located at Kundaim IDC, Ponda in Goa state. The unit was established in 1987 and is spread over 25 acres of land. Main activity carried out here is filling of LPG (Liquefied Petroleum Gas) in various cylinders of capacity 5 Kg, 14.2 kg, 19 kg, 35 kg and 47.5 kg & 450 Kg. The company has 3 mounded storage vessels of LPG each having a capacity of 200 MT. The LPG is hazardous material due to its flammable and explosive property. This unit is a Major Accident Hazard (MAH) unit as per Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules 1989. The unit is certified under ISO 9001, ISO 14001, and ISO 45001. Unit is also ISRS Level 5 certified.

Short Process Description of LPG storage System: -

- Goa HPCL LPG bottling plant receives LPG from Mangalore LPG Import Facility through LPG Road Tankers of 18MT capacity. The LPG tankers are unloaded with the help of 04 nos. of unloading bays and stored in 3 nos. of Mounded storage vessels (Bullets having capacity of 200MT each). The total capacity of the LPG storage is



600 MT. LPG from LPG Road Tankers are unloaded in the Mounded storage vessels (MSV).

- LPG is filled in the cylinders from 14.2 kg weight to 19 kg Weight (as per requirement) in the integrated carousel machine, 5Kg, 35Kg, 47.5kg & 450Kg cylinders are filled in stationary scales and filled cylinders after leak testing, weight testing and fixing safety caps& after sealing are stacked in the filled cylinder shed near the delivery end as per rules laid down by OISD/Gas Cylinder Rules.

BRIEF DESCRIPTION OF PLANT OPERATION:

1. Receipt of Bulk LPG:

Bulk Liquefied Petroleum Gas (LPG) is received through bulk LPG tankers of 18MT capacity from MLIF (HPCL Mangalore LPG Import Facility) and getting unloaded through Tank Truck gantry and stored in Mounded Storage Vessels (MSVs) having total capacity of 600 MTs (3*200 MT).

2. Cylinder Filling/Bottling:

Bulk LPG is being filled/bottled thru Carousal machine in 14.2 Kg, 19 Kg cylinders or thru manual filling in 47.5 Kg, 35Kg, 425 Kg, 5 Kg cylinders which

are received/transported thru packed trucks.

3. Quality Checks:

Post filling, cylinders are checked for weight variation, O-ring leak, valve/neck leak & body leak. Defective cylinders are isolated and evacuated and sent for repair.

4. Statistical Quality Check (SQC) & Despatch:

Lot of 32 cylinders are randomly picked after every 2 hours to perform quality check before final loading onto the packed trucks and ensuring only good quality cylinders is despatched to dealers.

8. M/s Goa Glass Fibre Ltd., Colvale, Bardez, Goa

3B, an innovative and entrepreneurial glass FIBRE manufacturer

3B-the fibreglass company is a leading developer and supplier of glass fibre products and technologies for the reinforcement of thermoplastic and thermoset polymers. We operate 3 state-of-the-art manufacturing facilities located in Battice (Belgium), Birkeland (Norway) and Goa (India) as well as a dedicated R&D Centre in Battice (Belgium) and a Customer Service Centre in Brussels (Belgium, at the very heart of Europe). Our products are designed and optimized to serve the automotive industry, the wind industry and to be incorporated in performance composites.

Unique knowhow and assets to support our customers

3B is a dynamic company with a rich heritage in fibreglass development and production, thanks to an excellent knowhow and innovation capacity and many years of experience.

The company operates 100 percent boron-free glass fibre manufacturing platforms with E-CR glass formulations, delivering significantly improved corrosion resistance, enhanced stiffness, higher temperature resistance and longer service life. The company uses a unique eco-responsible and high performance glass technology, HiPer-tex®, in its Norwegian plant. With a sound foundation of unique assets, 3B is committed to designing reliable and durable glass fibre solutions to support its customers.

A rich history

3B capitalizes on an extensive glass fibre expertise developed over the last 50 years. Our history started in



our Belgian plant in Battice, which saw its first production run in 1966 as part of Owens Corning. In 2008, 3B-the fibreglass company was formed as an independent company integrating 3 sites : the three benchmark manufacturing facilities of Battice (Belgium), Birkeland (Norway) and Goa as well as our R&D Centre in Battice and Customer Service Centre based in Brussels (Belgium).

Goa manufacturing facility in India

Our Indian plant was founded in 1996. Located in Goa in the Konkan in Western India, the plant operates one furnace and serves both the national Indian market and global customers active in the wind and performance composites markets. The Goa plant benefits from an excellent road network as well as from the direct proximity of the port.

Headed by PVVS RAO, some 290 staff members work in 3B's Goa plant, in the following departments: Production, Process & Technology, Maintenance, QHSE, Supply Chain and Logistics, Human Resources and Finance.



9. M/s Alcon Cement Company Pvt. Ltd., Surla, Goa



Our backward integration from construction saw us tying up with ACC, the cement giant. Alcon Cement Company was the result. In an exclusive joint venture with technical and marketing collaboration with ACC, we've set up a clinker grinding and cement packing plant in Goa. Clinker is supplied from ACC's Wadi plant while slag is procured from Sesa Industries, Aparant Iron & Steel and Tata Metalliks plants in Goa.

Alcon Cement Company has its plant situated at Surla village, Bicholim taluka about 15 km from Ponda – Panaji highway (NH-4A) and about 11 km from Sanquelim – Valpoi State highway. From the east, the plant is bounded by the Navelim – Surla – Usagao road. The Mandovi River flows along the west boundary of the plant. Dempo's Beneficiation Plant adjoins the plant on the north and to the south there is vacant land.

The Company was established in 1994, the first grinding unit in Goa to cater to the requirements of the cement market in Goa with 200 TPD single grinding and packing unit. The Company was started to manufacture Portland Slag cement by utilizing the by product of Pig Iron Plant (Slag) suitable for coastal environment. The Plant capacity was enhanced in 1998 to 500 TPD. The Company has a facility to grind clinker, slag and gypsum to produce Portland Slag cement and Ordinary Portland cement.

Alcon Cement Plant is a two stream plant comprising of two parallel cement grinding units, Unit 1 of 13TPH capacity and Unit 2 of 17TPH capacity. The raw materials used in the plant for the manufacture of cement are clinker, slag and gypsum. Each unit has two silos for cement storage, two silos of 500 MT each for Unit 1 and two silos of 1000 MT each for Unit 2. The plant includes two pack-

ing units, Packing Unit 1 of 20TPH and Unit 2 of 40TPH capacity. The plant is equipped with mechanized unloading system through truck tippler.

The automated operation of the two grinding units is controlled from the Electronic Control Room which is equipped with logical control desk and independent MCC for Units 1 and 2. To maintain the power factor there are HT and LT capacitors bank. As the source of power for the plant is 33 kv grid power from Goa Electricity Board a DG set of 180 kv is provided as a stand by power arrangement for the running of packing plant in case of power failure of Public supply, thus ensuring uninterrupted loading of finished product to customers.

The plant operates round the clock. Interlocks and material sensors are installed for feed table and weigh feeders, to maintain the quality of the product. The plant has Quality Control facilities and the necessary equipment to facilitate the testing of raw materials and quality of cement as per BIS Standards. To ensure consistent high quality parameters, periodic, hourly, daily and weekly samples are tested physically and chemically by qualified Gagers and Chemists at the QC lab.

To maintain safe working condition in the plant and to reduce near miss accidents regular fire fighting training, safety training and seminars on safety and quality of life are being conducted for the plant workers, staff and the contract workers. The plant is equipped with fire hydrant systems and fire extinguishers at various locations.

The Company is committed to preservation of a "Green" environment. To reduce the incidence of dust or airborne pollutants in the plant and surrounding area, dust collectors have been installed at strategic locations in the plant. Trees, shrubs and lawns have been planted, to beautify the premises.

10. M/s Berger Paints India Limited, Kundaim, Goa

Berger Paints India Limited., was incorporated in 1923 as Hadfield India Limited. The company's name was changed to Berger paints India limited in 1983. In 1988,. Mr. Vijay Mallya took over the ownership of M/s Berger, Jenson and Nicholson group of companies situated in Africa, Asia and Middle East. The ownership of the company changed hands when Mr. Vijay Mallya sold his share in the company to Mr. K S Dingra, the present chairman of then M/s. Berger Paints India Limited.

M/s Berger paints India Limited is amongst the oldest paint companies of India. Berger completed its 100 years last year. It is the 07th largest company in decorative paint in the world, Leader in protective coating in India for last few decades. 4th largest paint company in Asia, 15th largest paint company in the world. .

Berger Paints is having 10 manufacturing units all over India apart from its subsidiaries units in Russia & Nepal. There are several sales depots scattered all over the country. The turnover is around 12000 crores ., It is holding 19.7 % of total market share of paints.

Berger paints offer a variety of products. Like Decorative paints , protective paints, Automotive paints, Powder coating, etc.

In Goa , the paint factory was established at plot. No. 316-317 at Kundaim Industrial Estate, Kundaim, Goa in 1996 as Rajdoot Paints India Limited. Rajdoot was amalgamated with Berger paints India Limited in the year 2001 & the name was changed to Berger Paints India Limited. The products manufactured at the factory are Solvent Based paint, Water based paint & Resin , which is used for paint.

The Brief description of manufacturing processes of the products are as given below.

PROCESS FLOW CHART FOR WATER, BASE EMULSIONS/DISTEMPER

Stage I : Water, extenders, wetting agents etc. are

charged in the Twin Shaft Dispenser and ground .

Stage II: The slurry is transferred in Tanks where Emulsion and other additives are added and the shade matched to standard.

Stage III: After the batch is released from Q.C. the material is packed in Containers of appropriate pack sizes.

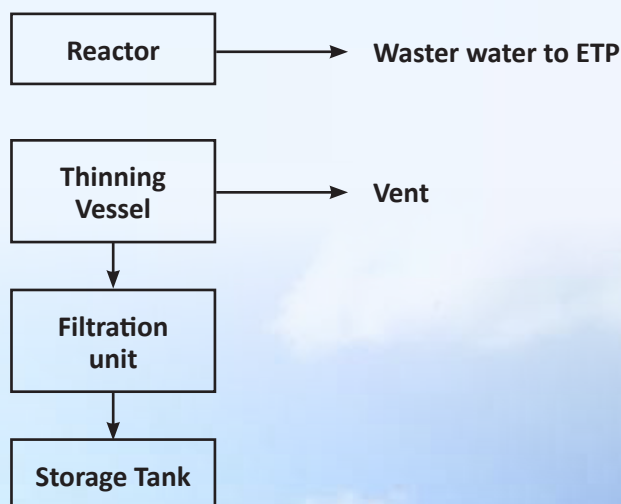
PROCESS FLOW CHART FOR SOLVENT BASE INDUSTRIAL PRIMERS/ENAMELS:

Stage I : The pigment, resin, solvents, dispersing agents etc. are charged in appropriate grinding Mill / and run for the required hours to attain grinding .

Stage III: The material is transferred to the Tanks where the balance process is completed to 100%.

Stage IV: After Q.C. releases the batch the material is packed in required sizes.

PROCESS FLOWFLOW CHART SHEET FOR RESIN



SPECIALTY CLINICAL EXPOSURE

Specialty Clinical Exposure: 20 Sessions

Specialty Clinical exposure in nearby ESI Hospitals/Any Tertiary Care Hospital/Medical Collage in the department of Respiratory Medicine/ENT/Eye/Dermatology/Orthopedics/Physical Medicine and Rehabilitation (PMR)/Community Medicine/Psychiatry or discussion of different topics by the specialists from the above departments to get exposure in recent advancement in the respective discipline with respect to occupational health issues.

N.B: A notebook is to be prepared by every AFIH delegate, containing brief description of educational/industrial visits and specialty clinical exposure and the same is to be submitted at the institute during examination.

TUTORIAL/DEMONSTRATION & PRACTICAL TRAINING

At the end of the training programme, participants should acquire the following practical skills:

OCCUPATIONAL AND ENVIRONMENTAL HEALTH: 35 Sessions

- a. Medical examination - proficiency in collection of proper occupational exposure history, general examination, recognition and demonstration of physical finding, pre-employment/pre-placement, periodic, exit medical examination and special examination.
- b. ILO International Classification of Radiographs of Pneumoconioses, CT scan for Occupational Lung Diseases
- c. Lung function tests
- d. Audiometry
- e. Vision testing
- f. E.C.G.
- g. Bio-chemical & pathological investigations, routine & special
- h. Research Methodology, Biostatistics, & Data Analytics
- i. First Aids, BLS & ACLS, Use of AED
- j. Evaluation of physiological work stress
- k. Exercise stress test
- l. Test for Vertigo
- m. Techniques for different anthropometric measurements, biomechanics

INDUSTRIAL SAFETY: 5 Sessions

- Practical/Video Demonstration of Machine Safety
- Practical/Video Demonstration of Fire Fighting Equipment
- Practical/Video Demonstration of Work at Height Safety Equipment
- Case discussion Bhopal, Mexico, Flixborough, Seveso, Chernobyl and Feyzin disasters

INDUSTRIAL HYGIENE: 15 Sessions

- Assessment of workplace airborne contaminants, Sampling, analytical techniques, and their interpretation.
- Monitoring of workplace ventilation, heat, humidity, noise, illumination & color, vibration, radiation
- Respiratory and Non-Respiratory Personal Protective Equipment

N.B: A notebook is to be prepared by every AFIH delegate containing brief description of the practical works and the same is to be submitted at the institute during examination.

ASSESSMENT

SUMMATIVE ASSESSMENT, i.e. at the end of the AFIH training
The summative examination would be carried out as per below mentioned schema.

1. Theory Examination:

The examination shall be in MCQ Type: 100 marks*.

Every correct answer will be of 1 mark and there will be no negative marking for wrong answer.

Sr.No.	Marks Distribution (Suggestive) in the Final Theory Examination	Marks
	Domain	
1.	Fundamentals of Industry and Industrial Management	05
2.	Occupational & Environmental Health	50
3.	Industrial Safety	10
4.	Industrial Hygiene	15
5.	OSH Statues & Standards	20
	Total	100

*Candidates securing 50 marks shall be declared to have passed in this section (Theory).

2. Practical/Oral/Clinical/Project Work examination: 100 marks**

a. SECTION: I (50 Marks)

Practical/Demonstration: 40 marks

Evaluation of Practical Notebook and Visit Workbook: 10 marks.

b. SECTION: II (50 Marks)

Oral/Clinical Examination: 40 marks

Evaluation of Project Work: 10 marks

**Candidates securing minimum of 50 marks [25 marks in Section: I and 25 marks in Section: II separately] shall be declared to have passed in this section (Clinical/Practical and oral examination)

N.B.: To qualify for the award of certificate, a candidate must pass in both the sections as mentioned in 1 (Theory Examination) and 2 (Practical/Oral/Clinical/Project Work examination) separately.

N.B.: Preparation of the MCQ type question papers and evaluation of the answer sheet and appointment of at two external examiners of medical discipline (One for Section-i and another for Section-ii) for Practical/Oral/Clinical/Project Work examination and publication of the result will be done by the respective institute.

N.B.: If a candidate fails in one session or not being able to appear in the same session due to unavoidable circumstances, he/she may be allowed to re-appear in the examination conducted next session. If he/she fails in that examination too, he/she will not be allowed to appear the examination in subsequent session. However, such candidate may re-apply for the course, he/she has to undergo the complete procedure of the admission to the course and shall be eligible to appear for the examination only after undergoing the complete course again with 75% attendance.

PROMINENT TRAINING FACULTIES



DR. BASAVARAJ C. PATTANSHETTI

Dr. Basavaraj C. Pattanshetti is a highly experienced medical professional with over three decades of expertise in health management, specializing in occupational health. He holds an M.B.B.S., a Diploma in Paediatrics (Dp. Paed.), and is an Associate Fellow of the Indian Institute of Health (A.F.I.H.). Dr. Pattanshetti has extensive experience across various roles in healthcare, including over 15 years in occupational health. He served as the Occupational Health Physician and Assistant General Manager of Medical Services at Sesa Sterlite for a decade. Additionally, he worked as a Medical Officer at Chowgule Mines for a year, and as an RMO in Medicine and Allied Specialties at Jaslok Hospital in Mumbai for five years. His diverse career also includes five years at a Pediatric Nursing Home in Belgaum District, and 10 years as a Government Medical Officer in the Health Department of Belgaum District.

Dr. Pattanshetti further contributed to the field of occupational health at leading companies, including a year at Encube Ethicals, Goa, two years at Nestlé Goa, and one year at Cipla Goa. With his broad experience in both clinical and occupational health settings, he has made significant contributions to improving health and safety standards in various organizations.



DR. AJIT VAIDYA

Dr. Ajit Vaidya is a seasoned medical professional with over 22 years of experience in the field of medicine, including a distinguished career in both hospital settings and occupational health. He began his medical journey in hospital environments, working at VM Salgaokar Medical Centre and Goa Medical College, where he gained expertise in the Departments of Medicine and Neurology. Over the past 17 years, he has specialized in Occupational Health, serving at Paradeep Phosphates Limited (formerly Zuari Agro Chemicals Ltd).

Dr. Vaidya holds an M.B.B.S. degree, completed his Post-Graduate Diploma in Maternal and Child Health (PGDMCH) from GMC in 2006, and earned the Associate Fellow of Industrial Health (AFIH) qualification from LMRC Pune in 2007. He is also trained in Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) from the American Heart Association (AHA) for the past eight years.

Dr. Vaidya has played a pivotal role in modernizing the Occupational Health Centre (OHC) at his organization, aligning it with NDMA guidelines for efficient casualty management, introducing initiatives such as Online ECG, chemical burn prevention, and CPR/AED training for workers. He was instrumental in achieving ISO 45001:2018 and ISO 14001:2021 certifications for the OHC, developing key documents such as HIRA, SOPs, and health worker training programs.



DR. CHITRALEKHA ANILKUMAR NAYAK

Dr. Chitralekha Anilkumar Nayak is a distinguished Senior Consultant Physician currently practicing at Healthway Hospitals, Old Goa, since 2018. She completed her MBBS and MD in General Medicine from Goa Medical College, graduating with distinction in 2011 and 2015, respectively. Dr. Nayak has an exemplary academic record, having been awarded numerous gold medals, including for the highest marks in MD Medicine. She has treated over 400 COVID-19 patients in the hospital and provided remote consultations to over 2,000 COVID-19 patients during the pandemic.

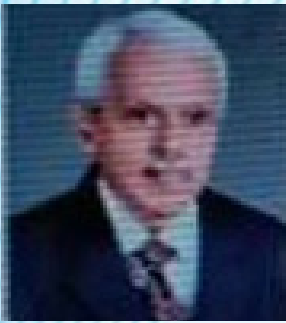
Dr. Nayak is also an Associate Professor and Co-Guide in the DNB Medicine program at Healthway Hospital since October 2022. She is actively involved in academic and professional activities, including delivering guest lectures on various medical topics and contributing to several national and international journals. A life member of multiple medical associations, she is also an award-winning presenter, including recognition for her oral presentation at GIMACON 2019. Outside of her medical practice, Dr. Nayak is passionate about art and sketching, a hobby she pursued during the COVID-19 lockdown. Her artwork was selected for exhibitions in Bengaluru and Goa. Dr. Nayak's commitment to both her profession and personal interests underscores her well-rounded approach to life and healthcare.



DR. SUNIL KAKODKAR

Dr. Sunil Kakodkar is an experienced Consultant Occupational Health Physician with over three decades of expertise in the field. He spent much of his career at a multinational mining company in Goa, where he retired as the General Manager of Group Medical Services at Vedanta Limited. Dr. Kakodkar has also served as a Consultant in Occupational Health at Manipal Hospital in Goa. He was a member of the Journal Advisory Committee for the Indian Journal of Occupational & Environmental Medicine (IJOEM) and held the position of Senior Vice President on the National Executive Committee of the Indian Association of Occupational Health (IAOH). He has also served as the President of both the local branch of the Indian Medical Association (IMA) and the IAOH Goa State Branch.

Currently, Dr. Kakodkar is a member of the appellate Medical Board of the Directorate General of Mines Safety (DGMS) for Goa and South India. He is also involved in academia, serving as a faculty member for Executive MBA graduates at Goa University and as a trainer for Associate Fellows of Industrial Health (AFIH) at IF&B, Altinho. Additionally, he is the Factory Medical Officer (FMO) for John Distillery and Vectura Fertin Pharma. A passionate cricket enthusiast, Dr. Kakodkar was part of the Goa Ranji team in 1985 and continues to play in National Doctors' Cricket Leagues, including tours to South Africa and the UK.



DR. VALLABH B. DHAIMODKER

Dr. Vallabh B. Dhaimodker is a renowned medical professional with expertise in Palliative Care, Anaesthesiology, and Occupational Health & Industrial Medicine. With 30 years of experience in Occupational Health, 15 years in Anaesthesiology, and 6 years in Palliative Care, he delivers exceptional patient care as Proprietor & Medical Director of Dr. Dhaimodker's Occupational Health & Research Centre.

Dr. Dhaimodker leads as Managing Trustee & Ex-Secretary of DILASA Palliative Care Centre and IMA Ponda Charitable Trust. His interests include promoting Palliative Care, integrating First Aid, Emergency Medicine & Disaster Management, and researching Occupational Health and Disaster Management. Notably, he established DILASA, Goa's first integrated Palliative Care Centre.

Dr. Dhaimodker's credentials include MBBS, MD (Anaesthesiology), Diploma in Occupational Health, and Certification in Palliative Care. He has published research on Occupational Health and Disaster Management. His dedication earned him awards for Best Palliative Care Centre and contributions to Occupational Health and Disaster Management.

Through his work, Dr. Dhaimodker improves patients' lives, advancing Palliative Care and Occupational Health in Goa. His expertise, leadership, and compassion make him a respected medical community figure.



SHRI. SUHAS KRISHNA NAIK

Shri. Suhas Krishna Naik is a seasoned expert in Occupational Safety and Health (OSH) with extensive experience spanning over four decades. He holds a Bachelor of Science degree with Chemistry as a principal subject from Bombay University (1974) and a Diploma in Industrial Safety from the Maharashtra Board of Technical Examination (1987). Shri Naik is a lead auditor for ISO 45001:2018 and has held significant roles in the industry.

He began his career as a trainee operator at CIBA-GEIGY (I) Ltd. in 1975, later working at Zuari Agro Chemicals Ltd., where he retired as Chief Manager of Fire & Safety after 39 years in the fertilizer industry. Currently, he serves as the Chief OSH Consultant for SN Safety Consultants, providing expert consultancy on OSH audits, emergency planning, and hazard identification. Shri Naik is also a visiting faculty member for the Government of Goa's Inspectorate of Factories & Boilers since 2001 and an expert panel member of the National Safety Council, under the Ministry of Labour, Government of India. He has presented papers at national seminars, including FICCI and DGFASLI, and has conducted over 1,000 training sessions on industrial safety. Shri Naik is actively involved in safety education and training programs, contributing significantly to OSH initiatives at both regional and national levels.



DR. NARESH SURESH FADTE

Dr. Naresh Suresh Fadte is a highly skilled medical professional with over a decade of experience in health management and occupational health. He holds an M.B.B.S. degree from Goa Medical College (2011) and is an Associate Fellow of Industrial Health (AFIH), having completed his certification through the Directorate General Factory Advice Service and Labour Institutes, Ministry of Labour & Employment, Government of India, in 2018.

Dr. Naresh Fadte currently serves as the Medical Inspector of Factories and Certifying Surgeon at the Inspectorate of Factories & Boilers, Altinho, Panaji, Goa, a position he has held since October 2021. He also coordinates the AFIH course at the same institute for 2021-2023. Prior to this, Dr. Fadte worked as an Insurance Medical Officer with the ESI in Panaji for over five years, and as an Assistant Lecturer in Anaesthesiology at Goa Medical College. He has also served in various roles, including Medical Officer at the Directorate of Health Services and Assistant Manager (Medical) at Chowgule Company. During the COVID-19 pandemic, Dr. Fadte contributed significantly to the management of interstate travelers, worked at quarantine centers, and supported COVID-related efforts at local health centers. He is also actively involved in training and education, having conducted numerous programs on occupational health, safety, and first aid for industrial workers.



DR. HEMANT K. KULKARNI

Dr. Hemant K. Kulkarni is an experienced Occupational Health Physician and Consulting Chest Physician with extensive expertise spanning several decades. He graduated with an M.B.B.S. from Mumbai University in 1980, followed by an MD in Chest Diseases and TB in 1985. In 1998, he earned a Post Graduate Diploma in Occupational and Industrial Health (DOIH) from Goa University. Dr. Kulkarni has specialized training in Allergy Testing, Intensive Respiratory Care Procedures, and Bronchoscopy from leading hospitals in India. He is registered with the Maharashtra and Goa Medical Councils and is affiliated with organizations such as the Indian Chest Society and the Indian Medical Association.

Dr. Kulkarni has worked internationally as a General Medical Practitioner in Doha, Qatar, and as a Chest Specialist in Misurata, Libya. Since 1994, he has been practicing as a Consultant Chest Physician in Margao, Goa. He has also provided Occupational Health services to companies like Abbott India, Sanofi-Aventis, and Dempo Shipping. In addition to his clinical work, Dr. Kulkarni conducts training programs on First Aid, Health & Hygiene, Ergonomics, Substance Abuse, and Infectious Diseases. He has also been actively involved in safety and ergonomic committees in various organizations, contributing to workplace health and safety initiatives.



DR. PARESH CHANDRA GHOSH

Dr. Paresh Chandra Ghosh is a highly experienced professional with over 40 years of service under the Ministry of Defence, Health & Family Welfare, and Labour & Employment, Government of India. He holds multiple academic qualifications, including a B.Sc. and M.Sc. in Physiology from Calcutta University, an M.Sc. in Engineering from IISc Bangalore, and specialized training in radioimmunoassay techniques. He has also undergone foreign training at the Korea Standards Research Institute in South Korea. Throughout his career, Dr. Ghosh has served as a faculty member for various postgraduate courses, including MD Physiology, M.Sc. in Physiology, Nutrition, Physiotherapy, and other allied fields.

Dr. Ghosh has been an examiner, paper setter, and guide for numerous universities and institutions across India, including Maharashtra University of Health Science, SNDT University, and Mumbai University. He has been actively involved in various professional bodies, such as the Indian Association of Occupational Health (IAOH) and the Indian Society of Ergonomics (ISE), and has chaired committees on standards and ergonomics. Dr. Ghosh has produced several scientific films and published over 37 peer-reviewed papers in national and international journals. His contributions have earned him numerous awards, including the Mohanmal & Company Gold Medal and the SR Maitra Memorial Oration Award. He retired as the Director of Physiology & Ergonomics at CLI, Mumbai.



DR. G. JAYARAJ

Dr. G. Jayaraj is a renowned expert in Occupational Health with over 40 years of experience across industries such as mining, hazardous sectors, construction, and healthcare management. He holds an MBBS from the University of Madras, an M.Sc. in Occupational Medicine from the University of London, and a Ph.D. in Occupational Health, among other qualifications. Dr. Jayaraj served 35 years at Neyveli Lignite Corporation (NLC India Limited), retiring as Executive Director of Medical Services in 2007.

He currently serves as the Managing Trustee of the Occupational Health Foundation and Managing Partner of Occupational Health Services in Chennai. His expertise covers a wide range of areas, including mining health, hazardous industry safety, environmental health, and industrial hygiene. Dr. Jayaraj is also deeply involved in teaching and research, with associations to organizations like the National Safety Council, Public Health Foundation of India, and the Indian Space Research Organization.

He has worked as an expert for UNIDO, served on academic boards, and contributed to safety standards across various industries. Dr. Jayaraj is passionate about advancing occupational health through research, training, and policy development.



DR. SHYAM PINGLE

Dr. Shyam Pingle is a senior Public Health Expert with a strong focus on Occupational Health, Workplace Wellness, and Community Health. He is currently an Adjunct Professor at the Indian Institute of Public Health Gandhinagar (IIPHG) and an expert on various committees of the National Safety Council. With over 45 years of experience, Dr. Pingle has spent 13 years teaching public health at institutions like Government Medical College Nagpur and IIPHG, and 30 years leading Medical and Occupational Health Services at prominent industries in India, including IBM, Reliance Industries, and NOCIL.

Dr. Pingle holds an MBBS (1978) and an MD in Preventive and Social Medicine (1982) from Nagpur University. He also completed a Diploma in Occupational Safety & Health from Sweden's National Institute of Working Life (2004) and earned the distinction of Associate Fellow of Industrial Health (AFIH) in 1999.

A trailblazer in the field, Dr. Pingle was the first Indian elected as Vice President of the International Commission on Occupational Health (ICOH) and served on its Board from 2018 to 2024. He has contributed significantly to global occupational health through research, keynote lectures, and his advocacy for workplace improvement and environmental health. Dr. Pingle is also an active member of advisory boards for occupational health journals and has authored chapters on basic occupational health services.



DR. RAMU

Dr. Ramu is an experienced Occupational Health Physician, Public Health Specialist, and First Aid Trainer with a strong background in healthcare and occupational medicine. He holds an MBBS from Chennai Medical College (2016), an MPH from IIHMR University, Jaipur (2020), and a Diploma in Industrial Hygiene (DIH) from Annamalai University (2021). Dr. Ramu is currently pursuing a Master's in Environmental and Occupational Health (MAEOH) from IGNOU (2024). He is registered with both the Tamil Nadu and Kerala Medical Councils.

Dr. Ramu serves as the Medical Officer and Certifying Surgeon in the Factories and Boilers Department, Kerala, and is the course coordinator for the AFIH program. He also works as a First Aid Trainer and Nodal Officer for the e-Sanjeevani Occu.Health telemedicine platform. His past roles include serving in the Central Labour Welfare Department and Plantation Corporation of Kerala. He has authored books on Occupational Health and First Aid for Factory Workers in Kerala and developed FMOSS software to monitor Factory Medical Officers.

Dr. Ramu holds various certifications from DGFASLI on occupational diseases, lung diseases, and emergency management. Fluent in English, Malayalam, Tamil, and Hindi, he is committed to advancing occupational health standards in India.

RECOMMENDED READING

Books (latest edition)

1. Parkes WR - Occupational lung disorders, Butterworths, London.
2. International Labour Organisation – Encyclopaedia of Occupational Safety and Health, Geneva.
3. National Institute of Occupational Safety and Health – Occupational respiratory diseases, US Dept. of Health and Human Service, Washington D C (Revised), USA.
4. World Health Organisation - Harmful exposure to mineral dusts, World Health Forum, 15(2).
5. Gardner AW - Current approaches to Occupational Health 2, John Wright & Sons Ltd, Bristol, London, Boston.
6. International Labour Organisation - Guidelines for the use of ILO International classification of Radiographs of Pneumoconiosis, Geneva.
7. Hunter's Diseases of Occupations, Hodder and Stoughton, London/Toronto.
8. Occupational Health - Harrington and Gill, Blackwell Scientific Publication, Oxford.
9. Epidemiology of Occupational Health – WHO, European Series No 20.
10. Monitoring for Health Hazards at Work - Gill and Ashton, Grant McIntyre, London.
11. Recent Advances in Occupational Health - MacDonald, Churchill Livingstone, London.
12. Occupational Diseases: A Guide to Their Recognition - National Institute of Occupational Safety and Health, NIOSH, Cincinnati.
13. Occupational Health Practice - Schilling, Butterworths, London.
14. Current Approaches to Occupational Medicine - Ward Gardner, J. Wright, Bristol.
15. Occupational Medicine - Zenz, Yearbook Publication, Chicago.
16. Epidemiology in Medical Practice - Barker and Rose, Churchill Livingstone, Edinburgh.
17. Occupational Epidemiology - Monson, CRC Press, Boca Raton.
18. Early Detection of Occupational Diseases -WHO, Geneva.
19. Epidemiology: Principle and Methods – Mac Mohan and Pugh, Little Brown, Boston.
20. Park's Textbook of Preventive and Social Medicine- Banarsidas Bhanot Publishers
21. Oxford Handbook of Occupational Health, OUP-UK
22. Harrison's Principles of Internal Medicine, Mc Graw Hill
23. Industrial Safety Handbook-Handley- Mc Graw Hill
24. Industrial Hygiene Simplified, Spellman, Bernan Press
25. Patty's Industrial Hygiene, Wiley
26. Occupational and Environmental Medicine by Joseph Ladou
27. Any other books as suggested by the faculties

Journals and Important Organizations & Repositories:

1. Safety and Health at Work, <https://www.sciencedirect.com/journal/safety-and-health-at-work>
2. Journal of Occupational Health, <https://onlinelibrary.wiley.com/journal/13489585>
3. Occupational and Environmental Medicine, <https://oem.bmj.com/>
4. Occupational Medicine, <https://academic.oup.com/occmed>
5. Indian Journal of Occupational and Environmental Medicine, <https://www.ijoem.com/>
6. International Journal of Occupational Medicine and Environmental Health, <https://link.springer.com/journal/13382/volumes-and-issues>
7. PubMed, <https://pubmed.ncbi.nlm.nih.gov/>
8. International Labour Organization, <https://www.ilo.org>
9. International Training Centre-ILO, <https://www.itcilo.org/>
10. World Health Organization, <https://www.who.int/>
11. Occupational Safety and Health Administration, USA, <https://www.osha.gov/>
12. European Agency for Safety and Health at Work, <https://osha.europa.eu/en>
13. Agency for Toxic Substances and Disease Registry (ATSDR), <https://www.atsdr.cdc.gov/>
14. Centre for Disease Control, USA, <https://www.cdc.gov/>
15. International Agency for Research on Cancer, <https://www.iarc.who.int/>
16. International Commission on Occupational Health, <https://www.icohweb.org/>
17. National Health Mission, <https://nhm.gov.in/>
18. National Digital Library of India, <https://ndl.iitkgp.ac.in/>
19. CSIR-Indian Institute of Toxicology Research, <http://iitrindia.org>
20. Central Pollution Control Board, <https://cpcb.nic.in/>
21. All India Institute of Hygiene and Public Health, MOHFW, GOI, <http://aiihph.gov.in/>
22. ICMR-National Institute of Occupational Health, <https://www.nioh.org/>
23. Online Learning Platform by Government of India, <https://swayam.gov.in/>
24. Directorate General Factory Advice Service and Labour Institutes, <https://dgfasli.gov.in>
25. Ministry of Labour and Employment, GOI, <https://labour.gov.in/>
26. Any other journals or websites as suggested by the faculties.

GOVERNMENT OF GOA
INSPECTORATE OF FACTORIES AND BOILERS,
ALTINHO, PANAJI, GOA – 403001

Website: www.ifbgoa.goa.gov.in, E-mail: mif-ifb.goa@nic.in

Telephone: 08322404841

INFORMATION BROCHURE CUM APPLICATION FORM FOR THREE MONTHS TRAINING PROGRAMME IN INDUSTRIAL HEALTH LEADING TO CERTIFICATE OF “ASSOCIATE FELLOW OF INDUSTRIAL HEALTH”

DURATION: 01/04/2025 to 30/06/2025

DATE OF PUBLICATION OF THE INFORMATION BROCHURE
CUM APPLICATION FORM: **13/01/2025**

LAST DATE FOR RECEIPT OF THE APPLICATION FORM BY SPEED POST OR BY HAND DELIVERY TO THE INSPECTORATE OF FACTORIES & BOILERS ALTINHO, PANAJI, GOA:
14/02/2025

Applications are invited in the format attached herewith for the Three Month Duration Training Programme in Industrial Health. Upon successful completion of the training program, participants will be granted the title of “Associate Fellow in Industrial Health”, accompanied by a certificate, from Inspectorate of Factories and Boilers, Althino, Panaji, Government of Goa. Which will fulfil the requirement in terms of qualification for Factory Medical Officers as required under The Factories Act, 1948 and the rules made there under.

The classes for the AFIH Course shall be conducted in off-line mode only, the course being a statutory requirement under The Factories Act, 1948 and the rules made there under

DURATION OF THE TRAINING PROGRAMME

- The programme will be conducted from **01/04/2025 to 30/06/2025**

NOMENCLATURE OF THE TRAINING PROGRAMME:

- Three Months Duration Training Programme in Industrial Health. Upon successful completion of the training program, participants will be granted the title of “Associate Fellow in Industrial Health”, accompanied by a certificate.

ESSENTIAL ELIGIBILITY CRITERIA FOR ADMISSION:

1. Candidates in possession of recognised medical qualification as per the provisions of the National Medical Commission (NMC) Act, 2019 and the repealed Indian Medical Council (MCI) Act 1956, and
2. Have completed one year of internship period.
3. Possessing permanent registration certificate issued by the NMC/ the erstwhile Medical Council of India or State Medical Council to practice medicine in India and
4. Minimum Two years working experience (as on the date of publication of the information brochure cum application form) in any establishment or self-practice after completion of the compulsory internship period. The period spent on higher studies in the field of modern medicine i.e. recognised post graduate medical degree/diploma (MD/MS/DNB/Diploma) or an equivalent recognised medical qualification as per provisions of the NMC Act 2019 and the repealed Indian Medical Council Act 1956 shall be considered as working experience.

SELECTION CRITERIA FOR ADMISSION:

Maximum intake capacity for this training programme at Inspectorate of Factories & Boilers, Altinho, Panaji, Goa is 25.

- Shortlisted candidates will be called for the interview at the Inspectorate of Factories & Boilers, Altinho, Panaji, Goa on **05/03/2025 and 06/03/2025** at 10 am.
- The Selection Committee constituted for AFIH Course shall be conducting the interview.
- The Selection Committee shall constitute of four members viz.
 - Course Co-ordinator (at the institutes) and one member each from Occupational Health, Industrial Hygiene and Safety.
- The decisions of the Selection Committee along with the report of the Course Co-ordinator (Provisional merit list) shall be published on website or notice board of the department on or before **10/03/2025**.
- The decision of the Selection Committee shall be final.
- No TA/DA will be paid for attending the interview.
- The candidates should produce all the certificates and documents in original at the time of interview.
- TIE PRINCIPLES –Wherever two or more candidates have secured equal aggregate marks, these tie(s) is/are resolved in accordance with the principles as mentioned below,
 - Priority-1: Age-Senior will be in the upper order of merit.
 - Then Priority-2: Date/Year of Completion of the Internship-Earlier the date/year of completion of internship will be in the upper order of merit.
- Incomplete application form (along with the documents to be submitted as mentioned in the prospectus) shall be rejected and no communications shall be made with the individual candidates from the institute.

VENUE OF THE TRAINING PROGRAMME:

- Inspectorate of Factories & Boilers, Altinho, Panaji, Goa – 403001.

APPLICATION PROCEDURE:

- Intended candidates can express their interest by sending the duly filled application form (Page No.41 to 44) in prescribed proforma along with self-attested copies of necessary attachments with DD (Demand Draft) of Rs 2000/- (Two Thousand only) in favour of “Chief Inspector of Factories & Boilers Goa” through speed post or by hand delivery only to “Chief Inspector of Factories & Boilers at Inspectorate of Factories & Boilers, Altinho, Panaji, Goa – 403001.
- On the outer envelope, it shall be clearly written as: “APPLICATION FOR THREE MONTHS TRAINING PROGRAMME IN INDUSTRIAL HEALTH AT INSPECTORATE OF FACTORIES & BOILERS, GOA”.
- Last Date for receipt of the Application form by speed post or by hand delivery to the Inspectorate of Factories & Boilers, Altinho Panaji, Goa: **14/02/2025** by 5 pm.
- Application forms sent by any other means other than mentioned above (like email, register AD, etc) shall not be considered/accepted.
- Mere application for the training programme does not confirm the allotment of the seat.
- List of the provisionally eligible candidates for interview will be notified/published on department website or department notice board on or before: **21/02/2025**
- List of Non-Eligible Candidates with reason will also be notified/published on department website

or department notice board on or before: **21/02/2025**

- Shortlisted/provisionally eligible candidates will be called for the interview at the Inspectorate of Factories & Boilers, Altinho, Panaji, Goa on **05/03/2025 and 06/03/2025** at 10 am.
- Merit List (Rank) of the provisionally eligible candidates will be notified/published on department website or department notice board on or before: **10/03/2025**
- Admission and fees deposition for the first 25 candidates (Rank:1 to 25) as per merit list will be conducted: **17/03/2025** from 10 a.m. onwards.
- If a candidate up to Rank-25, does not take the admission and does not deposit the fees by **19/03/2025** till 4 PM, his/her candidature will automatically be cancelled, and no request will be entertained and no correspondence will be made, in this regard in any circumstances. During admission, the physical appearance of the candidate with all original documents is essential and no authorization to any other person will be entertained in this regard in any circumstances.
- Publication of the Number of Vacant Seats on department website or department notice board: **24/03/2025** (If No Vacant Seat is available: NIL Report will be notified/published.)
- Reporting & Open Round Counselling for the Vacant Seats:
 - ➔ Reporting: If any candidate of Rank-26 to Rest, wants to take admission against the vacant seat, he/she has to appear physically only on **31/03/2025 at 10 AM**, at Inspectorate of Factories & Boilers, Altinho, Panaji, Goa – 403001 and submit a physical application for his/her willingness to attend the open round counselling for the vacant seats to “The Chief Inspector, at Inspectorate of Factories & Boilers, Altinho, Panaji, Goa – 403001. Candidature for the rest of the candidates will automatically be cancelled, and no request will be entertained, and no correspondence will be made, in this regard in any circumstances.
 - ➔ Filling of the vacant seats will be made on **31/03/2025, 11 AM**, strictly as per the order of merit, only from the candidates reported and applied on **31/03/2025** to attend the open round counselling for the vacant seats. The physical appearance of the candidate himself/herself is essential during the allotment of seats on **31/03/2025** and no authorization to any other person will be entertained in this regard in any circumstances.
 - ➔ Mere reporting and presence on the open round counselling do not confirm the allotment of seats.
- No TA/DA/etc will be provided to attend the document verification/admission/ Reporting/Open Round Counselling or for any other purpose.
- The Information related to admission/selection or any other matter for this training programme will be notified/updated on the Notice Board of Inspectorate of Factories & Boilers, Altinho, Panaji, Goa – 403001 or department website (www.ifbgoa.goa.gov.in) from time to time.
- No personal communication will be made to individual candidates. •
- Commencement of the Training programme: **01/04/2025, 09.45 AM**.
- Detailed training programme schedule will be intimated/notified in due course of action.
- Exam Dates:-
 - ➔ Theory Exam: **07/07/2025** at 10 AM at Inspectorate of Factories & Boilers, Altinho, Panaji, Goa.
 - ➔ Practical Exam: **10/07/2025** at 10 AM at Inspectorate of Factories & Boilers, Altinho, Panaji, Goa.

STIPEND/INCENTIVE/BOND POSTING

There will be no provision for stipend/incentive/bond posting to training participants.

IMPORTANT INFORMATION:

- Only after verification of all documents with original copy and submission of required papers, the provisionally selected candidates will be allowed to deposit fees as per the details given below:

- Fees for the Training Programme: On the day of admission to the course, the provisionally selected candidates will be issued e-challan of Rs 50,000/- (Non-refundable) as institute fee and same needs to be paid by the candidate by online mode or depositing the said amount in treasury bank.
- Procedure for payment through online mode.
 - ➔ Go to echallanpg.goa.gov.in portal.
 - ➔ Then go to Have e-challan number.
 - ➔ Enter e-challan number & Rs 50,000/- in total amount & press Go.
 - ➔ Then proceed to enter relevant details as asked in the portal & continue for online payment through internet banking/Debit Card/ UPI.
- This provisional admission will be granted based on the information/documents furnished by the Candidates as per their application form and during the admission process. In case of any credentials/information/document/certificate etc. being detected or identified or being noticed at any point as false/fabricated/tampered/misleading, his/her candidature and certificate are liable to be cancelled and the fees paid will not be refunded. Appropriate action in this regard will be initiated by the Chief Inspector.
- All the Students are required to bring THREE passport-size photographs and one set of self-attested photocopies of all documents/certificates/testimonials including educational & experience certificates along with originals.
- During the training programme, more than 80% attendance is desirable. A minimum of 75% attendance is mandatory to appear for final examinations. Attendance will be counted from the first day of commencement of the course. Those who do not fulfil the minimum required attendance criteria would not be allowed to appear in final examinations.
- All students are required to adhere to the uniform dress code for doctors i.e. White Coat/Apron.
- The expenses towards Food/Stay/Industry Visits/Project Work/Term Work/Examination fees/Lab Reports Books, /Stationeries/copies of study materials/handouts/lectures/ notes and other assignments, etc as part of the curriculum have to be borne by the candidate himself/herself.
- The classes will be held from 9.45 am to 5.45 pm on all working days (Monday to Friday). Students are expected to devote their full time to the course.
- During the tenure of the course, students are required to keep track of the different components of the training programme. The Institute will not be responsible if any deadline is missed by the student.
- Any kind of indiscipline/uncivilized behaviour and unparliamentary language in the Institute, hostel, and campus shall be dealt with strictly and disciplinary action will be initiated by the competent authority.
- There shall be a total ban on any act of ragging performed directly or indirectly by any student of the institute. No student shall commit, abet, propagate, or participate directly or indirectly in ragging in or outside the institute.
- Every student is required to observe discipline and maintain decorous behaviour both inside and outside the Institute and not to indulge in any activity which will tend to bring down the prestige of the Institute and against the professional ethics of the medical practitioners. If a student indulges in malpractice, he/she shall be liable for punitive action as prescribed by the Institute from time to time.
- For any matter related to this training programme, the Decision of the Competent Authority of the Inspectorate of Factories & Boilers, Altinho, Panaji, Goa as applicable/appropriate shall be final.

**APPLICATION FORM FOR ADMISSION TO
ASSOCIATE FELLOW OF INDUSTRIAL
HEALTH (AFIH) – 2025**
(All information should be filled in CAPTIAL LETTERS only)

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1.	Name of the applicant (As mentioned in the Medical Council Registration Certificate) in English and Hindi			
	Name of the applicant in Hindi			
2.	Gender (Male/Female/ Prefer Not to Say)			
3.	Date of birth (dd/mm/yyyy)	dd	mm	yyyy
4.	Address as per AADHAR Card of the applicant			
5.	Mobile No. of the Applicant			
6.	E-Mail of the applicant			
7.	MBBS (or Equivalent) Degree Certificate and Name of the University Institute:			
8.	Date (DD-MM-YYYY) of Internship Completion:			
9.	MBBS (or Equivalent) Professional Registration Number as per NMC/MCI and name of the Registering Body (NMC/MCI/Name of the State Medical Council):			
10.	Experience after completion of internship (attach self-attested copies of experience certificates from organization/employers or certificate of self-practice in prescribed format – ANNEXURE-I) (Cut-off date to calculate experience is __ /__ /____).			

ANNEXURE-I

Name of the Organization/ Employer or Certificate self-Practice with Address	Duration		Experience in Completed Year	Please Categorically Mention Working experience in Factory/Mines /Dock Works/Construction Work/Plantation Work other establishment or Self Practice as applicable	Experience Certificate/ Certificate of Self-Practice, As applicable: Enclosed (YES/NO)
	From (DD-MM-YYYY)	To (DD-MM-YYYY)			

- Total Experience (Completed Years Only) in Factory/Mines/Dock Works/ Construction Work/Plantation Work: _____ YEAR
- Total Experience (Completed Years Only) in Other Establishment or Self Practice (ANNEXURE-I) _____ YEAR

11. Postgraduate medicinal degree/diploma (MD/MS/DNB/Diploma) or an equivalent recognized medical qualification as per provisions of the NMC Act 2019 and the repealed Indian Medical Council Act 1956

NAME OF THE POST GRADUATE MEDICAL DEGREE (MD/MS/DNB) / POST GRADUATE MEDICAL DIPLOMA /ANY OTHER EQUIVALENT RECONGNISED MEDICAL QUALIFICATION (PLEASE MENTION SPECIALITY OR SUPER SPECIALITY ALSO)	TRAINING INSTITUTION OF THE POST-GRADUATE MEDICAL QUALIFICATION	BOARD/ UNIVER-SITY	YEAR OF PASSING	DURATION OF COURSE IN YEARS	IS THE COURSE A RECOGNISED MEDICAL QUALIFICATION AS PER PROVISIONS OF THE NMC ACT 2019 AND THE REPEALED INDIAN MEDICAL COUNCIL ACT 1956 OR EQUIVALENT (YES/NO)

● Total period spent on Postgraduate medical degree/diploma (MD/MS/DNB/Diploma) or an equivalent recognized medical qualification: _____ YEAR

12. DOCUMENTS TO BE ATTACHED WITH THE APPLICATION FORM:

SR. No	Document Required	Self - Attested Copies of the Document Attached (YES/No/Not Applicable)
1.	Matriculation/10th Standard or equivalent certificate indicating date of birth, or mark sheet of Matriculation/10th Standard or equivalent issued by Central/State Board Indicating Date of Birth in support of claim of age. Where date of birth is not available in certificate/mark sheets, Issued by concerned Educational Boards, School leaving certificate indicating Date of Birth or Birth Certificate issued By the Registrar of Births and Deaths or the Municipal Corporation or any other prescribed authority, whosoever Has been empowered under the Registration of Birth and Deaths Act, 1969 to register the birth of a child born in India	
2.	AADHAAR CARD of the applicant	
3.	MBBS Degree (or Equivalent) certificate awarded by the University/ Medical Institute. In the absence of the MBBS Degree (or Equivalent) Degree certificate, provisional degree certificate along with mark sheets pertaining to all the Academic years.	
4.	One-Year Internship Completion Certificate	
5.	MBBS (or Equivalent) Professional Registration Certificate as per NMC/MCI/State Medical Council:	
6.	Experience certificate from organization/employers of Factory/ Mines/Dock Works/Construction Work/Plantation Work	
7.	Experience certificates from organization/employers of the establishment other than Factory/Mines/Dock Works/ Construction Work/Plantation Work	
8.	Undertaking by the Organisation (ANNEXURE-A)	
9.	Declaration by the candidate for self-employment/private practice (ANNEXURE-B)	
10.	Declaration by the Candidate (ANNEXURE-C)	
11.	Documents in supports Post Graduate Medical Degree (MD/MS/ DNB)/Post Graduate Medical Diploma/ Any Other NMC or MCI Recognised Post Graduate Medical Qualification/Equivalent Post Graduate Medical Qualification	
12.	In respect of equivalent Post Graduate Medical Qualification, If a candidate is claiming a particular qualification as equivalent to NMC/MCI recognized post-graduate medical qualification, then the candidate is required to produce a copy of order/letter in this regard, indicating the Authority (with number and date) under which it has been so treated otherwise it will not be considered as recognized post graduate medical qualification.	

13. If any document/certificate furnished is in a language other than Hindi or English, a transcript of the same duly attested by a Gazetted officer or notary is to be submitted.
14. Appointment letter/Pay slip/offer letter/resignation or termination letter/extension letter will not be accepted as Experience Certificate.
15. The applicants are advised to read the information brochure cum application form, course curriculum and guidelines very carefully and then fill the application form meticulously as submission of false/fabricated/tampered/misleading/mismatched information may lead to rejection of the application and candidature at any time.

ANNEXURE – A

UNDERTAKING BY THE ORGANISATION

(On the Letter head of registered Factory/Dock Works/Mines/
Construction and Building Works/Plantation Etc.)

I/We hereby undertake that our employee Shri/ Smt./Ms.....
.....S/o/ or
D/o or W/o Working
as a (Designation)
while pursuing the conducted 3 months Associate Fellow of Industrial Health (AFIH) Course, if found
involved in any misconduct/misbehaviour during the study period, I/we will abide by the decision taken
by the Principal of the course including dismissal from the Course.

Name and Signature of the Competent Authority of the Sponsoring Organisation with seal and address

Place:

Date:

ANNEXURE – B

DECLARATION BY THE CANDIDATE FOR SELF-EMPLOYMENT/PRIVATE PRACTICE

1. I, S/o or D/o..... hereby declare that I am a self-employed/private practitioner working at (address) _____

_____ from (dd/mm/yyyy) _____ to (dd/mm/yyyy) _____ (period of working) and I have total work experience of _____ years _____ months.

2. I am also enclosing the following documents for the proof of the place of the self-employment.

Place: Name:

Date: Signature:

Registration Number with seal:

ANNEXURE – C

DECLARATION BY THE CANDIDATE

I, _____, s/o or d/o _____ hereby declare that the information furnished in this application is true and correct and that no material information has been suppressed by me. I also understand that I stand to be disqualified from being admitted to the Course or from continuance in the Course, in the event of any information being found incorrect/false/fabricated/tampered/misleading/mismatched. While pursuing the 3 months training programme in Industrial Health (AFIH), if found involved in any misconduct/misbehaviour during the study period. I will abide by the decision taken by the Inspectorate of Factories & Boilers, Altinho, Panaji, Goa including dismissal from the Course. I undertake to produce all the Original Certificates, Testimonials, etc. regarding my Educational Qualification, Experience, etc., at the time of admission to the course without fail and non-producing of these documents during admission will disqualify me from seeking admission to this training programme. I also declare that my name is currently present in the Indian Medical Register and/or State Medical Register of the NMC/MCI/State Medical Council and is currently not blacklisted by any authority.

Date:

Applicant's Name and signature

Place:



स्वच्छ भारत
एक कदम स्वच्छता की ओर

