DPU

Dr. D. Y. PATIL VIDYAPEETH, PIMPRI, PUNE

(Deemed to be University)

(Accredited (3rd Cycle) by **NAAC** with a **CGPA** of **3.64** on four point scale at **'A++' Grade)**

(Declared as **Category - I University** by UGC Under Graded Autonomy Regulations, 2018)

2022-23

LIFE BELOW WATER

Compendium SDG-14

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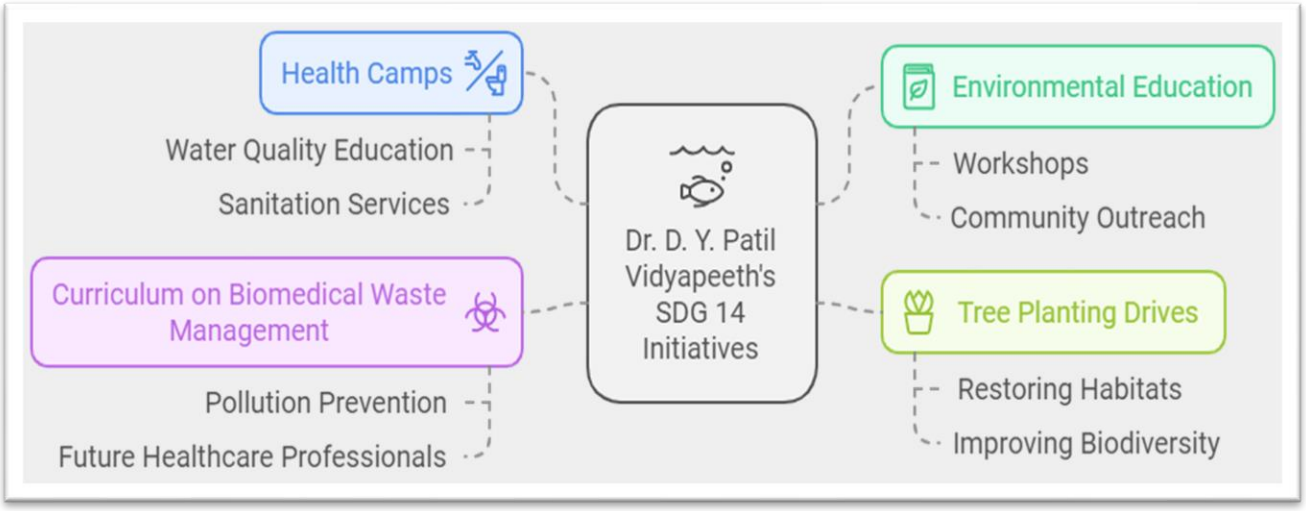
Introduction

Sustainable Development Goal 14 (SDG 14) emphasizes the critical need to conserve and sustainably use the oceans, seas, and marine resources. Recognized as a cornerstone of the United Nations' 2030 Agenda for Sustainable Development, SDG 14 highlights the essential role that healthy marine ecosystems play in supporting biodiversity, regulating climate, and providing livelihoods for millions of people worldwide. Covering more than 70% of the Earth's surface, oceans are vital not only for their rich biodiversity but also for their contributions to food security and economic stability.

Dr. D. Y. Patil Vidyapeeth, Pune, acknowledges the importance of SDG 14 and is committed to fostering awareness and action regarding marine conservation. Our institution aims to contribute to the global discourse on sustainable development by promoting research, education, and community engagement focused on the protection of marine ecosystems.



Community Involvement and Education

Dr. D. Y. Patil Vidyapeeth, Pune, is actively contributing to Sustainable Development Goal 14 (Life Below Water) through a variety of impactful initiatives that promote marine conservation and sustainable practices.

One of the key actions involves organizing health camps focused on water quality and sanitation. These camps not only provide essential health services to local communities but also educate participants about the importance of clean water and its direct correlation to marine health. Additionally, the institution emphasizes environmental education by raising awareness about the conservation of water resources. Through workshops and community outreach programs, students and faculty engage with the public, promoting sustainable water usage practices and highlighting the critical role of healthy aquatic ecosystems. These initiatives aim to foster a sense of responsibility towards protecting local water bodies from pollution and over-exploitation.

NSS Unit of DR. D.Y Patil Dental College Student Council Initiative

Event: World Health Day

Date: 7th April, 2023

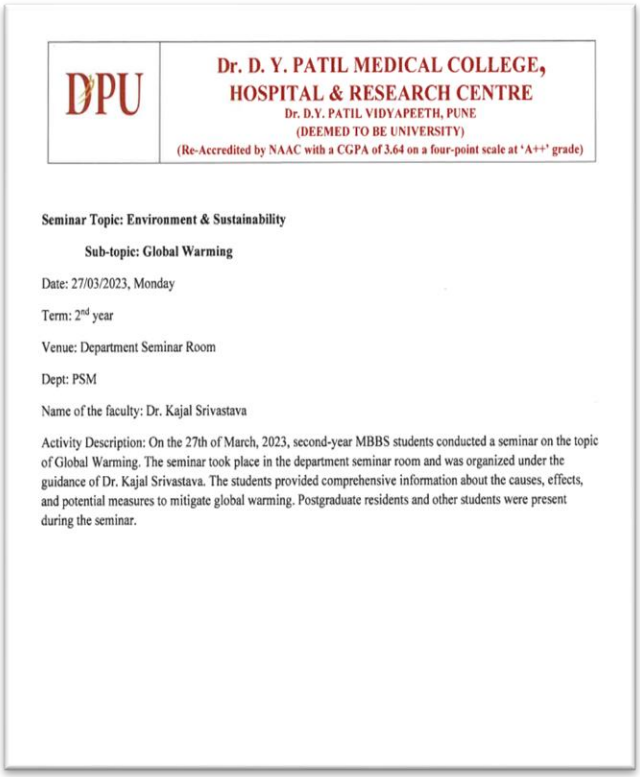
Venue: Dr. D. Y. Patil Dental College and Hospital, Pimpri

The NSS unit of Dr. D. Y. Patil Dental College Student Council celebrated the World Health Day by giving spreading awareness about Maintaining Good Hygiene and Health on Friday, 7th April 2023 in the different locations around Pimpri Chinchwad.

The Awareness included the students explaining the importance of eating healthy Food and Drinking clean water. Different aspects of maintaining good health of oneself as well as the society was explained.

Total no. of students participated: 8

Spreading awareness on good hygiene and clean water sanitation by Dr. D. Y. Patil dental college on world Health day



DPU

Dr. D. Y. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE
Dr. D.Y. PATIL VIDYAPEETH, PUNE
(DEEMED TO BE UNIVERSITY)
(Re-Accredited by NAAC with a CGPA of 3.64 on a four-point scale at 'A++' grade)

Seminar Topic: Environment & Sustainability

Sub-topic: Global Warming

Date: 27/03/2023, Monday

Term: 2nd year

Venue: Department Seminar Room

Dept: PSM

Name of the faculty: Dr. Kajal Srivastava

Activity Description: On the 27th of March, 2023, second-year MBBS students conducted a seminar on the topic of Global Warming. The seminar took place in the department seminar room and was organized under the guidance of Dr. Kajal Srivastava. The students provided comprehensive information about the causes, effects, and potential measures to mitigate global warming. Postgraduate residents and other students were present during the seminar.

Lecture on Global warming and its effects on forests, oceans and climate changes on Environment Day

Tree planting drives organized by the university further enhance these efforts. By restoring local habitats and improving biodiversity, these initiatives contribute to better water management and climate resilience. Trees play a vital role in preventing soil erosion, maintaining water cycles, and enhancing the overall health of ecosystems, which indirectly supports marine life.

DPU DR. D. Y. PATIL DENTAL COLLEGE & HOSPITAL
DR. D. Y. PATIL VIDYAPEETH, PUNE
(Deemed to be University)
(Re-accredited by NAAC with a CGPA of 3.62 on a four point scale at 'A' Grade)
(An ISO 9001: 2015 Certified University)

Ref. No: DYPDCH/ 163 /2023 Date: 05/06/23

NSS Unit of DR. D.Y Patil Dental College Initiative

Event: Environment Day

Date: 5th June 2023

Venue: Dr. D. Y. Patil Dental College & Hospital

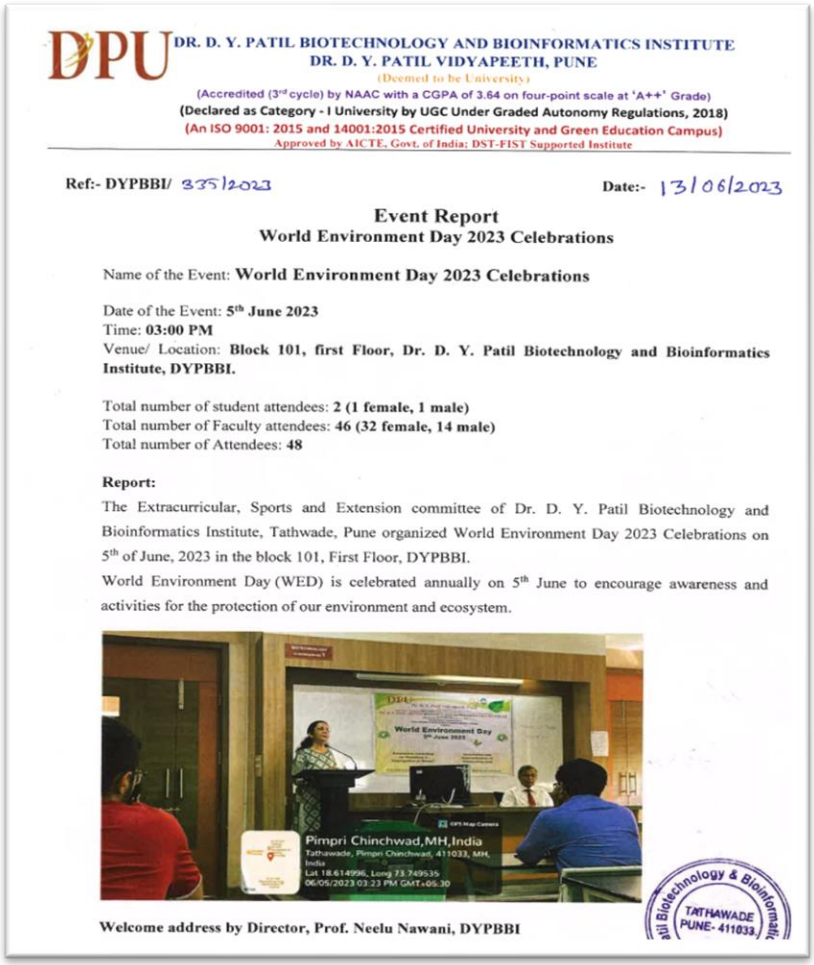
The NSS unit of Dr. D. Y. Patil Dental College Student Council celebrated the Environment Day on 5th June 2023. The NSS members initiated a drive by distributing samplings to the patients that came to Dr. D. Y Patil Dental College and Hospital. Patients were also educated about the importance of Maintaining good environment and not causing any harm to the nature. The motive of celebrating this day was to create awareness about raise awareness on the protection and preservation of the environment.

Total no. of students participated: 4

Tree sapling distribution to the patients by Dr. D. Y. Patil Dental College on world environment day

Furthermore, the curriculum at Dr. D. Y. Patil Vidyapeeth includes comprehensive education on proper biomedical waste management. This aspect is crucial, as improper disposal of medical waste can lead to water contamination, adversely affecting both human health and marine environments. By instilling this knowledge in students, the university ensures that future healthcare professionals understand their role in safeguarding aquatic ecosystems.

Tree plantation activity on the occasion of World Environment Day by Dr. D. Y. Patil School of Science and Technology



DPU DR. D. Y. PATIL BIOTECHNOLOGY AND BIOINFORMATICS INSTITUTE
DR. D. Y. PATIL VIDYAPEETH, PUNE
(Deemed to be University)
(Accredited (3rd cycle) by NAAC with a CGPA of 3.64 on four-point scale at 'A++' Grade)
(Declared as Category - I University by UGC Under Graded Autonomy Regulations, 2018)
(An ISO 9001: 2015 and 14001:2015 Certified University and Green Education Campus)
Approved by AICTE, Govt. of India; DST-FIST Supported Institute

Ref:- DYPBBI/ 335/2023 Date:- 13/06/2023

Event Report
World Environment Day 2023 Celebrations

Name of the Event: **World Environment Day 2023 Celebrations**

Date of the Event: **5th June 2023**
Time: **03:00 PM**
Venue/ Location: **Block 101, first Floor, Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, DYPBBI.**

Total number of student attendees: **2 (1 female, 1 male)**
Total number of Faculty attendees: **46 (32 female, 14 male)**
Total number of Attendees: **48**

Report:

The Extracurricular, Sports and Extension committee of Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Tathwade, Pune organized World Environment Day 2023 Celebrations on 5th of June, 2023 in the block 101, First Floor, DYPBBI.

World Environment Day (WED) is celebrated annually on 5th June to encourage awareness and activities for the protection of our environment and ecosystem.

Welcome address by Director, Prof. Neelu Nawani, DYPBBI

Dr. D. Y. Patil Biotechnology & Bioinformatics Institute TATHAWADE PUNE- 411033

Lecture on Biomedical waste management, importance of water and energy conservation on World Environment Day by Dr. D. Y. Patil Biotechnology and Bioinformatics institute

"Swaccha Bharat Abhiyan" by students of Dr. D. Y. Patil School of Science and Technology

Through these multifaceted approaches, Dr. D. Y. Patil Vidyapeeth is making significant strides toward achieving SDG 14, fostering a culture of conservation and responsible management of water resources among students and the broader community.

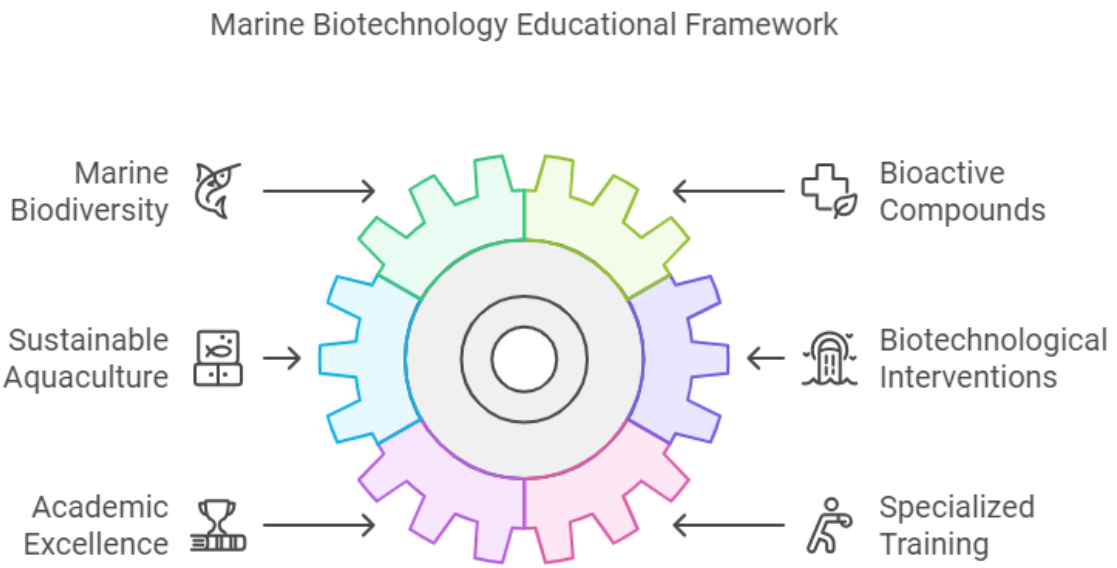
Integration of Marine biotechnology in Curriculum

At Dr. D. Y. Patil Biotechnology and Bioinformatics Institute Pune, we explore the depths of marine biotechnology through advanced academic programs and groundbreaking research. Our Marine Biotechnology course, offered to Third Year-Semester VI of B. Tech. (Biotechnology), B. Tech (Medical Biotechnology), M. Tech (Integrated)6th semester), where students delve into marine ecosystems' biology, chemistry, and biotechnology applications which reflects our commitment to the field. This program equips students with hands-on experience in exploring the mysteries of marine organisms and ecosystems, providing insights into biotechnological applications that can benefit humanity.

The course emphasizes critical areas such as:

- Marine biodiversity and ecosystem functioning.
- Bioactive compounds derived from marine organisms, such as chitin.
- Sustainable aquaculture practices.
- Biotechnological interventions to address marine pollution.

Academic Excellence and Specialized Training



Our Marine Biotechnology course focuses on the study of marine organisms, their genetic makeup, and their potential for industrial and pharmaceutical applications. This curriculum includes theoretical aspects but also practical laboratory techniques. One such technique used extensively in our labs is analysis of biomolecules and proteins derived from marine species. Through such methods, students gain essential skills in molecular biology, which are foundational for marine biotechnology research.

TITLE OF THE COURSE: MARINE BIOTECHNOLOGY **L T P Hr C**
COURSE CODE: BT 602 **2 0 2 4 3**
MARKS: 75

OBJECTIVE:
The objective of the course is to give an overview of marine environment and its living and nonliving resources. Further the utility of the resources for overall benefit of humans and other biota is also covered.

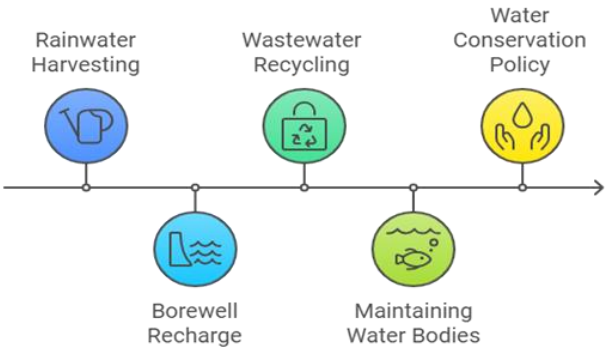
COURSE OUTCOME:
On the completion of the course, students will be able to,

- Demonstrate the methods to study the microbial biodiversity and role of microbes in the marine ecosystem
- Explain the marine natural products, their sources and their applications
- Culture algae for the production of various algal compounds and production of enzymes and antibiotics from marine microbes
- Explain the acts and laws related to conservation of marine life

PRE-REQUISITES:
Students are expected to have a basic understanding in Biology.

Water Conservation Measures

Dr. D. Y. Patil Vidyapeeth, Pune, has implemented several initiatives to promote sustainability and water conservation across its campus. These efforts align with the university's commitment to environmental stewardship, ensuring the efficient use of water resources. The primary water conservation strategies include rainwater harvesting, borewell recharge, wastewater recycling, maintaining water bodies, and a comprehensive water conservation policy.



1. Rainwater Harvesting:

The university has installed a robust **rainwater harvesting system** in Ayurveda and Medical colleges in Pimpri and at Tathwade campus as well. It collects and stores rainwater. This system channels rainwater from rooftops and paved areas into underground storage tanks, which is then used for non-potable purposes such as gardening, cleaning, and flushing toilets. By capturing rainwater, the institution reduces its dependency on external water supply and contributes to replenishing local groundwater levels. The system is designed to efficiently capture runoff from monsoons, ensuring minimal water wastage.

Rainwater Harvesting Pit

2. Borewell / Open Well Recharge:

Dr. D. Y. Patil Vidyapeeth has implemented **borewell and open well recharge techniques** to augment groundwater levels. The collected rainwater is diverted to recharge pits near borewells and open wells, allowing water to percolate back into the ground. This initiative is essential in maintaining sustainable groundwater levels, which are vital for the institution's long-term water needs. The recharge structures are regularly maintained to ensure they remain effective, especially during the monsoon season when the water availability is highest.

Borewell/Open Well Recharge

3. Wastewater Recycling:

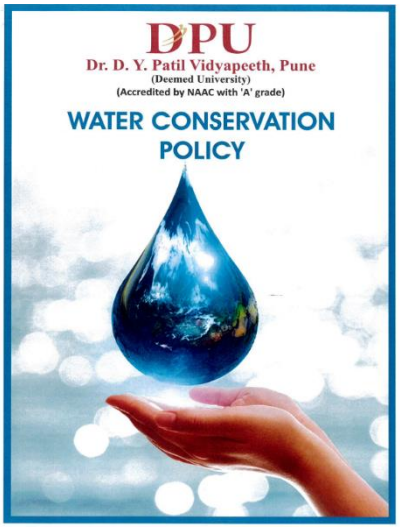
One of the key components of the Vidyapeeth's water conservation strategy is **wastewater recycling**. The campus is equipped with a 4 **Sewage Treatment Plants (STP)** that treat wastewater generated from residential areas, academic buildings, and laboratories. The total capacity of STP is 1170 m^3/day. STP water quality is checked at regular intervals. The treated water is then reused for landscaping, flushing, and cooling systems, significantly reducing freshwater demand. This recycling process not only conserves water but also minimizes the environmental impact by reducing wastewater discharge into natural water bodies.

Water Recycling Plants

4. Maintenance of Water Bodies and Distribution System:

The **water distribution system** across the campus is well-maintained to prevent leaks and water wastage. A dedicated team monitors the distribution network, ensuring that pipelines and storage tanks are in optimal condition. Periodic audits are conducted to identify areas of improvement and upgrade old infrastructure as needed.

5. Water Conservation Policy:



Dr. D. Y. Patil Vidyapeeth has established a comprehensive **water conservation policy** to guide its sustainable water management practices. This policy outlines the institution's commitment to reducing water consumption, promoting rainwater harvesting, utilizing recycled water, and maintaining water bodies. It also emphasizes the importance of educating students, staff, and faculty about the need for water conservation through awareness programs and workshops. The policy is designed to foster a culture of sustainability and ensure that water is used responsibly across all campus operations.

Research And Innovation For Sustainable Development

At Dr. D. Y. Patil Vidyapeeth, Pune, we recognize that while our city may not have direct access to oceans, our rivers and lakes play a crucial role in supporting local ecosystems and communities. Achieving Sustainable Development Goal 14 (SDG 14) involves a commitment to the sustainable management of these freshwater resources, which are integral to life both below and above water.

The research at the institute explores biomolecules from different ecosystems. In addition to exploring marine and fresh water resources, our research addresses global environmental challenges, such as marine pollution and the sustainable management of bio-resources. A key focus is on bioremediation strategies for removing toxic pollutants, including heavy metals, from freshwater systems. Our patented methods for the removal of metals from aqueous solutions have gained international recognition.

Previous research publications have explored various aspects of marine life, including the discovery of novel compounds with antimicrobial and antifungal properties. Our focus on bioprospecting of microbial flora from water and saline sources has led to several successful projects funded by Government of India. Our research in marine biotechnology extends to the utilization of marine resources, such as chitin, a bioactive compound derived from marine organisms, for various biotechnological applications. This research not only helps in

advancing knowledge but also addresses crucial environmental issues such as waste management and pollution reduction. Our publications have contributed significantly to the recycling of marine bioresources, including the study of agarose, agar waste, and bioremediation. These discoveries open doors for sustainable solutions in biomedicine, environmental conservation, and industrial applications.

By prioritizing research and innovation, Dr. D. Y. Patil Vidyapeeth aims to contribute to the preservation of freshwater ecosystems, ultimately supporting the broader goals of sustainable development and environmental stewardship in our region.

National Research Projects:

TDT, Department of Science and Technology, Government of India, April 2020-March 2023 Segregation and management of laboratory wastes for resource recovery and value addition.

PI: Dr. Viniti Vaidya DYPBBI Co-PI: Dr. Neelu Nawani.

Project value: Rs. 50 lakhs

Authors	Publication	Year	Journal Name
Tabassum H, Ahmad IZ	Applications of metallic nanomaterials for the treatment of water	2022	Letters in Applied Microbiology
Puntambekar Ashwini N., Bharat L.K., Venkateswara Swamy K., Dake Manjusha S.	Isolation, purification and biochemical characterization of a thermophilic alkaline protease from hot water spring bacteria	2022	Research Journal of Biotechnology
Nawani N., Rahman A., Mandal A.	Microbial biomass for sustainable remediation of wastewater	2022	Biomass, Biofuels, Biochemicals: Circular Bioeconomy: Technologies for Waste Remediation
Gaikwad S., Pawar N.J., Bedse P., Wagh V., Kadam A.	Delineation of groundwater potential zones using vertical electrical sounding (VES) in a complex bedrock geological setting of the West Coast of India	2022	Modeling Earth Systems and Environment
Kadam A., Wagh V., Jacobs J., Patil S., Pawar N., Umrikar B., Sankhua R., Kumar S.	Integrated approach for the evaluation of groundwater quality through hydro geochemistry and human health risk from Shivganga river basin, Pune, Maharashtra, India	2022	Environmental Science and Pollution Research