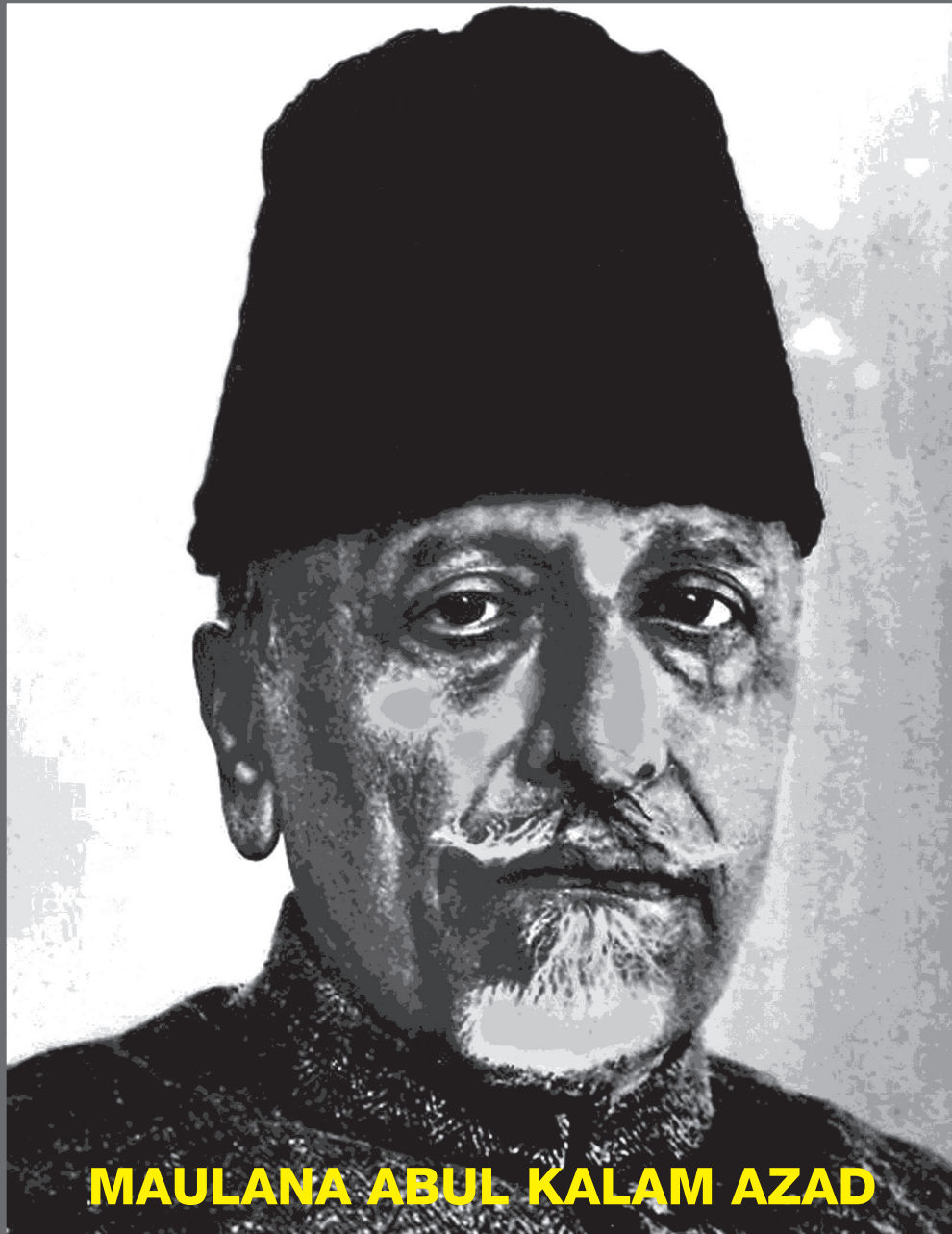


Happy Diwali

VIPNET CURIOSITY

VIPNET NEWS—VIGYAN PRASAR NETWORK OF SCIENCE CLUBS

NOVEMBER 2020 | VOL 1 | NO 9 | ₹ 5



MAULANA ABUL KALAM AZAD

**A THINKER OF NEW
MODERN EDUCATION**

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EDITORIAL

Arvind C. Ranade

Festival of Science

On 21 October Hon'ble Minister for Science and Technology Dr Harsh Vardhan announced the dates for India International Science Festival (IISF) for the year 2020. It will be held from 22 December to 25 December on virtual platform. Last year, from 05 to 08 November 2019, the same festival was organised in Kolkata. It is an initiative of the Ministry of Science and Technology, Ministry of Earth Sciences and Vijnanan Bharati—a well-known science movement with a swadeshi spirit. Perhaps, IISF is the first festival of its kind in India where science is learned, taught, discussed, and enjoyed at the same time. I have been witnessing this festival right from its first edition in 2015 organised at Indian Institute of Technology, Delhi. The growth of the festival has been phenomenal! The number of participants has grown from 5000 to 15000; number of events from 7 to 28 and number of visitors from few thousand to a million.

IISF has completed five editions and travelled to Delhi, Chennai, Lucknow and Kolkata. It has been successful in brining change in the mindset of the common people, wherein it was presumed that science can only be taught in labs; technology can be showcased in the institutions and research cannot be understood by common man! Whenever the festival travelled, the campus saw participation of farmers, businessman, artists, fishermen, entrepreneurs, and industrialists along with students, teachers, academicians, scientists, and engineers. The festival is successful in showcasing and demonstrating the state-of-the-art science and technology of the country.

No doubt, it will be extremely excit-

ing to see IISF-2020 in its new 'virtual' Avatar! One needs to appreciate the idea, courage and enthusiasm to organize the event in such challenging time of COVID-19. This year, the Council of Scientific and Industrial Research (CSIR) is going to shoulder the responsibility of organising the festival. Few new events will also be added. It has been proposed to have at least 40 parallel events during the festival. We will soon inform you on how you can participate in events of your choice and the procedure for application, nominations and selection. There are more than ten events where your creativity, innovations and expertise will be of immense value and where you can participate or join as an expert. On behalf of the VIPNET team, I wish a grand success of IISF-2020 and also promise to help and extend our support to CSIR as appropriate.

The present issue of Curiosity is also been brought out with the same commitment, interest and dedication. It has a special article on Maulana Abul Kalam Azad and articles on physical and mental health; our spices and the regular article on impact of COVID-19 on river Ganga. Also, our regular features like poems, Sky Map, Club Speak, Science Quiz etc. are there for your participation. November is the month of festivals and excitements. I wish you a very happy and prosperous Diwali and urge you for celebrating a safe, secure, clean and green festival.

*Dr. Arvind C Ranade is Scientist 'F' and
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Maulana Abul Kalam Azad: A Thinker of New Modern Education

Mayuri Dutt

“If A Country is to be corruption free and become a nation of beautiful minds, I strongly feel three key societal members, who can make a difference. They are the Father, the Mother and the Teacher.”

Maulana Abul Kalam Azad

Since 2008, November 11 has been celebrated as the **National Education Day** to commemorate the birth anniversary of independent India’s first education minister, Maulana Abul Kalam Azad. He was a prominent figure on the Indian political scene. A scholar high in the realms of Urdu literature, he added trend-setting innings as a journalist as well. He was a freedom fighter and upholder of secular and democratic values. He had a modern outlook, and he also realized the importance of fundamental research in “science and technology”. He believed that without transcending the barriers imposed by narrow nationalism, linguistic chauvinism and religious fanatics, it was not possible to achieve a position of honour and dignity in the comity of nations.

Maulana Abul Kalam Azad was a noted scholar, poet, and revolutionary journalist. He was born on November 11, 1888, in Mecca. In 1890, his father moved to Calcutta with his whole family. He has always shown his profound gratitude towards his scholar father for his early education.

Pandit Jawaharlal Nehru once said that Maulana Azad had a mind like a razor, which cut through a fog of ideas. Maulana also contributed his ideas on religion-state and civil society in India.

Gandhiji said, “I consider Maulana, a person of the calibre of Plato, Aristotle, and Pythagoras.”

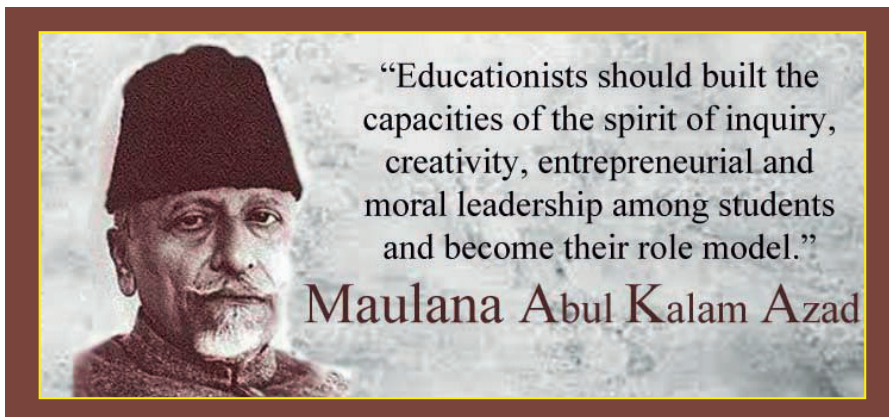
On National Education Day, India remembers his exemplary contributions towards nation-building, institution-building, and particularly his influential imprints in the field of

education. Maulana said Schools were the laboratories that produce future citizens of the country. Maulana Azad is often credited to establish the base for Higher education; Technological and scientific research; Education that was instrumental in industrialisation; and the emergence of knowledge-based industries.

He was always very vocal about the principal purpose of education. In an address to the first meeting of the Central Advisory Board of Education (CBSE), he said: “The primary aim of any system is to create balanced minds which cannot be misled.” As the Minister of Education, he had the challenging task of building an education system to develop a national spirit. He introduced a system to bring a rational approach and spirit of enquiry in the field of education.

Shaping the path

Maulana Abul Kalam Azad was an academician, poet and a freedom fighter. He made India realise the value of education. After India’s independence, the scholars were stressing on strengthening the education system of the country in order to make it the “fundamental pillar” towards nation building. Speaking at All India Education on January 16, 1948, Kalam said, “We must not for a moment forget, it is a birthright of every individual to receive at least the basic education without which he cannot fully discharge his duties as a citizen.” As the first Education Minister of the country from 1947 to 1958, he strongly advocated for free and compulsory primary education for



all children up to the age of 14.

Soon after Independence, the country was reeling under the effects of years of exploitation, domination, subjugation and widespread illiteracy and poverty. As the Chairman of Central Advisory Board of Education he gave impetus to Adult Education and Literacy. He also put emphasis on elementary education and propagated importance of Secondary education and Vocational training.

Maulana also played an important role in establishing the Jamia Millia Islamia in Delhi and later was instrumental in setting up of the IITs and University Grants Commission. With a democratic approach and for universalization of education, he focused on strengthening primary education all over the country

He also proposed that there should be three languages; the state languages and Hindi will be medium for instruction but English will be the second language. For universalization of elementary education, he raised the issue of the National System of Education which formed the base of the National Policy on Education (1986) that was later modified in 1992. He supported the instructive structure of 10+2+3 throughout India. All students, irrespective of caste, creed, region, or gender have access to education of a comparable quality. His dream became a reality with the historic RTE Act 2009, which makes free and compulsory primary education for children between



the age of 6 and 14 years. Every single instructive programme, he said, must do in strict congruity with common esteems and established system.

Maulana Azad was one of the rare personalities who thought of a learning society through liberal way. He was for an all-inclusive instruction consolidating the humanism of Indian expressions and the logic of western sciences. He dreamt of a society where the powerless would be secure, the young restrained and the ladies lead an existence of nobility.

Maulana Azad Education Foundation:

Maulana Azad Education Foundation was established on the occasion of birth centenary celebrations of Maulana Abul Kalam Azad. The Foundation is a voluntary, non-political, non-profit making social service organization, established to promote education amongst edu-

cationally backward sections of the society.

Maulana Azad National Fellowship

The Maulana Azad National Fellowship (MANF) is implemented by the Ministry of Minority Affairs through UGC. The fellowship holders will be known as Ministry of Minority Affairs scholars. It caters to the minority community students pursuing regular and full-time research studies leading to award of M.Phil/Ph.D degree. The objective is to provide 5 years fellowships in the form of financial assistance to students from six notified minority communities viz. Buddhist, Christian, Jain, Muslim, Parsi and Sikh.

Maulana Abul Kalam Azad died of a stroke on February 22, 1958. Government of India awarded him with India's highest civilian honour, Bharat Ratna, in 1992 for his immense and purposeful contributions to the nation. A distinguished philosopher, true statesman, politician, and administrator, Maulana was an institution in himself.

CHECK YOUR KNOWLEDGE:

1. What is the full name of Abdul Kalam Azad?
2. In which year, Abdul Kalam Azad was awarded Bharat Ratna?
3. Name the two Urdu weeklies started by Abdul Kalam Azad.
4. In which year the Ministry of Human Resource Development (MHRD) decided to celebrate 11 November as National Education Day?
5. When Maulana Azad was elected as the President of the Indian National Congress?

Send us the correct answers of the quiz at curiosity@vigyanprasar.gov.in to win exciting prizes.

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Email: dutt.mayuri@gmail.com*

Online Learning: Physical Health & Mental Wellness

Anita Babu

The spread of coronavirus has prompted almost every country of the world to adopt social distancing and lockdown.

People have restricted movements and are barred from many of their daily activities. It has brought about significant change in their lifestyle. Students' lives have been impacted as their classrooms have shifted to a virtual mode. Online

new applications and platforms. However, for many of them, changes in lifestyle has led to a lot of physical and mental health issues.

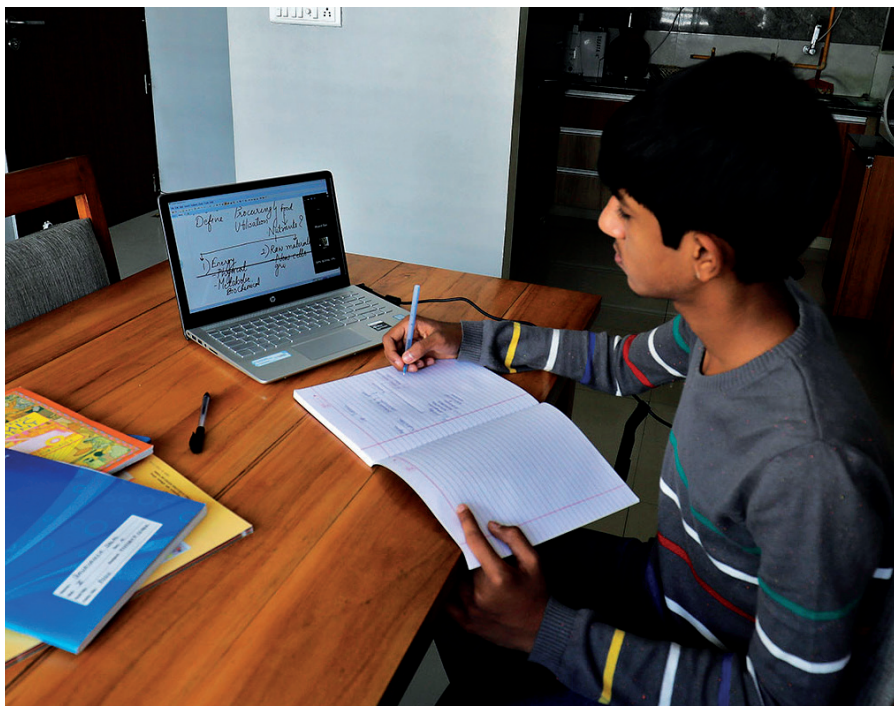
PHYSICAL HEALTH ISSUES:

During the lockdown, due to reduced physical activities and binge eating many of the students have started gaining weight. This leads to obesity and

headphones can harm the eardrums. Students now have irregular sleep cycles, which has led to many health issues including a lot of stress to eyes. Lack of exposure to sunlight can cause lack of Vitamin-D and B-12.

Mental health issues

Due to online classes, students feel disconnected from their teachers and classmates. They do not get proper feedback on their academic performance, which caused anxiety in many. Many students face connectivity issues during online classes. Most of the students are new to the platforms used for the virtual classes and find it difficult to operate them. Due to financial and family issues, many students cannot afford to attend online classes; this has contributed to stress in them. Indian Psychiatric Society has also reported an increase in psycho-social concerns like substance abuse, domestic violence, sexual violence, and anxiety disorders during the lockdown period. There is a shortage of medications for people suffering from various mental issues already, which can worsen condition of people who are already suffering.



classes have benefitted students in many ways. It has helped them to stay home during this pandemic to minimise the chances of getting infected, and at the same time, continue their learning experience. It has provided them a platform to access content generated from different parts of the World. The virtual mode of education has helped students become tech-savvy by exploring various

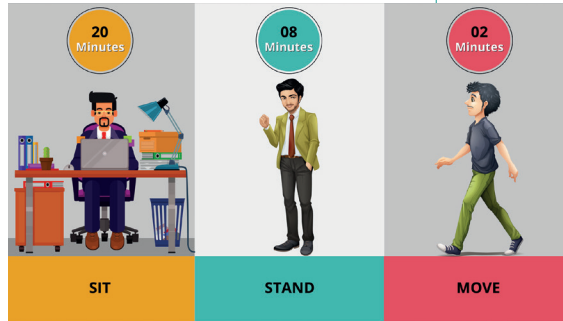
can have many adverse effects on their health. Virtual mode of learning has increased the screen time, which adversely affects vision. Sitting in front of computers for a long time in an improper posture can also lead to tight muscles of shoulders, neck, and arms and even result in back pain. While attending online classes, many students use headphones at a high volume. Continuous usage of

Remedies & Recommendations provided by the Government

(Source: Pragyata: Guidelines for Digital Education)

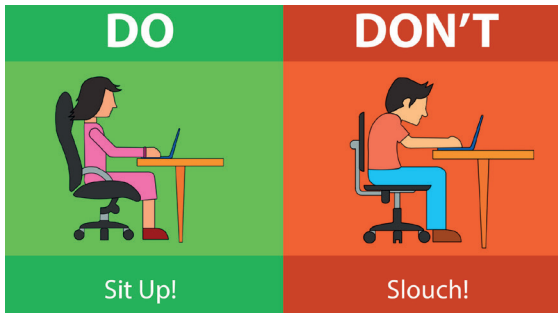
Physical Wellness

- The postures and practices performed by a student throughout the day while using digital devices have a significant impact on his/her health and wellbeing. Taking small breaks while attending online classes for walking and stretching



(insomnia); and
C. Stress or tension manifested as difficulty in relaxing, and being easily upset or agitated, irritable or over-reactive, and impatient.

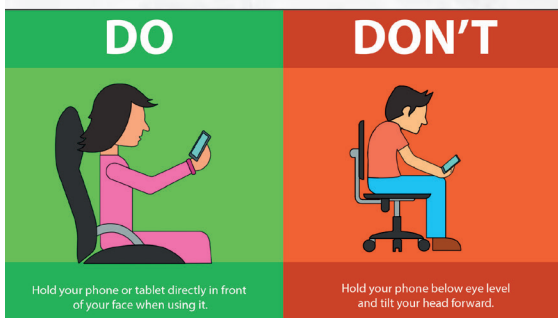
Due to increase in mental issues during the lockdown period,



activities can also help in stress management and reducing anxiety and stress levels.

- Practicing Yoga and physical exercises on a regular basis can help in strengthening the immune system as well as strengthening muscles, bones, and joints.

the National Institute of Mental Health and Neuro-Sciences launched a toll-free helpline number-08046110007. The number can be used by people who face any mental issues during the lockdown period.



Mental Wellness

- The students should report any type of malpractices on the internet and report it to teachers/parents or any adult at home. The teacher or the parent may also orient students



for the responsible use of the internet and make them aware about the consequences its misuse can cause to one's academic, personal, social and mental wellbeing.

- The parents and teachers should be vigilant towards the behaviour of their wards/students and in case

Learning Environment

The parents should ensure that the learning environment has proper lighting, ventilation and it is noise-free.

The Government of India has started initiatives like DIKSHA and eVidya that provide materials for helping students to understand the concepts that are taught. These initiatives have reduced the stress faced by students while trying to understand difficult concepts. Along with the studies, it is essential to ensure that children do not lose their childhood experiences during this lockdown period. Let us all make sure that we spend at least one hour every day doing some physical activities and in pursuing hobbies.

can reduce back pain and all kinds of aches resulting from continuous sitting.

- Students must find time for themselves during this lockdown period to engage in physical activities like walking, gardening, dancing, cycling, house cleaning, etc. Engaging in physical activities can reduce the risk of diabetes, improve our immunity, improve fitness and flexibility, improve our sleep, and maintain a healthy weight. Physical

of any unusual behaviour and connect them to counsellors for help. Examples of such behaviour are negative emotional states such as

A. Depression manifested as dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest or involvement, and inertia;

B. Anxiety manifested as restlessness, fatigue, trouble concentrating, irritability, muscle tension, trouble sleeping

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Sky Map FOR NOVEMBER 2020

Vipin Singh Rawat

The sky map is prepared as per the coordinates of Nagpur (21.09°N, 79.09°E). It includes constellations and the brighter stars. For viewers south of Nagpur, constellations of the southern sky will appear higher up in the sky and those of the northern sky will appear nearer the northern horizon. Similarly, for viewers north of Nagpur, constellations of northern sky will appear higher up in the sky and those of the southern sky will appear nearer the southern horizon.

THE MAP CAN BE USED AT 10 PM ON 1ST NOVEMBER; AT 9 PM ON 15TH NOVEMBER AND AT 8 PM ON 30TH NOVEMBER.



Visibility of Planets



Astronomical Events of

NOVEMBER 2020

10TH NOVEMBER

MERCURY AT GREATEST WESTERN ELONGATION

Mercury reaches greatest western elongation of 19.1 degrees from the Sun. The planet can be spotted low in the eastern sky just before sunrise.

NOVEMBER 11, 12

NORTHERN TAURIDS METEOR SHOWER

The Northern Taurids is a long-running minor meteor shower producing only about 5-10 meteors per hour. The Northern Taurids is produced by dust grains left behind by Asteroid 2004 TG10. Meteors will radiate from the constellation Taurus but can appear anywhere in the sky.

NOVEMBER 17, 18

LEONIDS METEOR SHOWER

The Leonids is an average shower, producing up to 15 meteors per hour at its peak. This shower is unique in that it has a cyclonic peak about every 33 years where hundreds of meteors per hour can be seen. The Leonids is produced by dust grains left behind by comet Tempel-Tuttle. Meteors will radiate from the constellation Leo but can appear anywhere in the sky.

30TH NOVEMBER

PENUMBRAL LUNAR ECLIPSE

A penumbral lunar eclipse occurs when the Moon passes through the Earth's partial shadow or penumbra. The eclipse will be visible throughout most of North America, the Pacific Ocean, and northeastern Asia including Japan. The penumbral eclipse begins at about 13:02 hrs (IST) and ends at about 17:23 hrs (IST). It will not be visible from India.

OUR SPICES

Manisha Agarwal Garg and Anant Bhaskar

In the present time of the COVID-19 pandemic, all of us need to take extra measures to stay safe. Nowadays, awareness regarding the importance of plants having medicinal properties has grown among people. It has become more pertinent for our health and well-being. Medicinal plants are the primary treatment resources for most traditional healthcare practitioners in India. It is evident from the human history that medicinal plants had been the treatment regimen to cure various diseases, including diseases caused by insects, fungi, bacteria, and viruses. Himalayan

forest range is a biodiversity hotspot and is well known for its rich resources for plant-based therapy. Uttarakhand, a Himalayan state of India, is endowed with a rich wealth of medicinal plants. It is traditionally known as the gold mine of medicinal plants. These plants play a significant role in earning the livelihood of the people residing in the area. The development of indigenous medicines using medicinal plants to treat various diseases has a significant impact on the nation's economy.

This year, the theme of World Environment day was biodiversity to make people aware of the importance

of protecting species from extinction. Uttarakhand's residents extensively use these medicinal plants for treatment. Most of these are less expensive and have no side effects. However, some of these plant species are on the verge of extinction due to urbanization, population explosion, tourism industry, deforestation, etc. Thus, we need to take some steps to conserve our biodiversity.

An essential category of these medicinal plants is spices. Spices are the essence of Indian cuisine, which, on one hand enhances the taste of the food and on the other helps in improving our health and immunity. Many of these spices are easily available and less expensive. Spices have played essential role in managing primary symptoms of many ailments for ages. During the time of season change, people are prone to catching cold or fever as the immunity is low, and the body takes time to adapt to the changing temperatures. To prevent ourselves free from these infections, we can use some common spices in our daily diet to enhance immunity. Ministry of AYUSH has declared 18th November as National Naturopathy Day. The Day is celebrated to encourage using a drug-less medicine system to prevent diseases by altering diet and lifestyle.

Regular use of some spices can cure a variety of diseases. Spices like Haldi (Turmeric), Jeera (Cumin), Dhaniya (Coriander), and Lahsun (Garlic) are recommended in cooking for many benefits they offer. Drinking of herbal tea/decoction (Kadha) made from Tulsi (Basil), Dalchini (Cinnamon), Kalimirch (Black pepper), Shunthi (Dry Ginger),



The infographic features the Government of India logo and the Ministry of AYUSH logo. It lists three measures: 1. Chyavanprash (10g), 2. Herbal tea (Kadha) from Tulsi, Dalchini, Kalimirch, Shunthi, and Munakka, and 3. Golden Milk (Haldi powder in hot milk). The bottom section shows a variety of spices and herbs.

Ayurvedic Immunity Promoting Measures

-  Take Chyavanprash 10gm (1tsf) in the morning. Diabetics should take sugar free Chyavanprash.
-  Drink herbal tea / decoction (Kadha) made from Tulsi (Basil), Dalchini (Cinnamon), Kalimirch (Black pepper), Shunthi (Dry Ginger) and Munakka (Raisin) - once or twice a day. Add jaggery (natural sugar) and / or fresh lemon juice to your taste, if needed.
-  Golden Milk- Half tea spoon Haldi (turmeric) powder in 150 ml hot milk - once or twice a day.

and Munakka (Raisin) is said to help in prevention of COVID-19 (as recommended by Ministry of AYUSH).

Cloves are the dried flower buds obtained from the evergreen tree called a clove tree. In India it has been in use for over 2000 years. The clove buds, stem, and leaves yield an essential oil having medicinal properties. Clove is the most common home remedy for maintaining oral health. Its antiseptic properties help to reduce pain and infection. Clove oil is used to cure tooth cavity. It is also proved to be an effective remedy for asthma and cough, and its consumption also improves digestion. Clove oil also helps in stabilizing the blood circulation.

Turmeric, a common spice used in Indian cuisine, is a root obtained from the dried rhizome. It is an integral part of our traditional Indian medical system. Curcumin is the natural anti-in-

flammatory bright yellow coloured compound found abundantly in turmeric. It proves to be an effective remedy for chronic cough and throat infections. Turmeric is beneficial in sprains and in removing ringworm and scabies. It is an iron-rich spice valuable for anaemic patients. Turmeric powder with milk is an effective household remedy for bronchial asthma. Recent research studies have shown that it effectively prevents and manages heart disease, cancer, and Alzheimer's disease. Turmeric paste is also used for treating skin problems.

Curry leaves are obtained from the curry trees (*Murraya koenigii*), tropical to sub-tropical tree and native

to Asia. The leaves are rich in iron and folic acid. The leaves are aromatic and slightly bitter. They strengthen the function of the stomach and promote its action. It helps in preventing anaemia. Curry leaves help in stimulating the insulin-producing cells. These cells help in controlling the blood sugar levels. Curry leaves paste is externally used to treat burns and bruises. Curry leaves fight infections and can brighten your hair and skin.

Black Pepper is one of the oldest spices, which is known as the "King of Spices." It is packed with vitamins A, K, C, and minerals like calcium, potassium, and sodium. It is an effective remedy for cold, fever, and coughs. Black Pepper helps to speed up the metabolic process and burn calories more quickly. It is useful in pyorrhoea or pus in the gums. A pinch of black pepper powder mixed with clove oil gives relief in toothache. Black Pepper is a rich source of anti-oxidants. It has anti-inflammatory and anti-cancer properties. Black pepper can also control blood sugar levels and lower cholesterol.

Cardamom is the "Queen of Spices." The dried fruits with tiny seeds are used as a spice. Cardamom is useful in treating gas, heartburn, improving digestion, hiccups, and depression. When mixed with ginger, clove and co-



Simple Ayurvedic Procedures

- Nasal application - Apply sesame oil / coconut oil or Ghee in both the nostrils (Pratimarsh Nasya) in morning and evening.
- Oil pulling therapy - Take 1 table spoon sesame or coconut oil in mouth. Do not drink. Swish in the mouth for 2 to 3 minutes and spit it off followed by warm water rinse. This can be done once or twice a day.

During dry cough / sore throat

- Steam inhalation with fresh Pudina (Mint) leaves or Ajwain (Caraway seeds) can be practiced once in a day.
- Lavang (Clove) powder mixed with natural sugar / honey can be taken 2-3 times a day in case of cough or throat irritation.
- These measures generally treat normal dry cough and sore throat. However, it is best to consult doctors if these symptoms persist.



SPICES HINDI NAME	COMMON NAME	BOTANICAL NAME	IMAGES
Laung	Clove	<i>Syzygium aromaticum</i>	
Haldi	Turmeric	<i>Curcuma longa</i>	
Curry Patta (Kadi Patta)	Curry Leaves	<i>Murraya koenigi</i>	
Kali Mirch	Black Pepper	<i>Piper nigrum</i>	
Choti Elaichi	Cardamom	<i>Elettaria cardomomum</i>	
Tej Patta	Bay Leaf	<i>Laurus nobilis</i>	
Saunf	Fennel	<i>Fenniculum vulgare</i>	
Dalchini	Cinnamon	<i>Cinnamomum verum</i>	
Jeera	Cumin	<i>Cuminum cyminum</i>	
Hing	Asafoetida	<i>Ferulafoetida</i>	

riander, it helps in digestion. It is used in preparing breath freshener. Daily gargle with cardamom helps to treat sore throat.

Bay leaves are rich source of vitamin A, vitamin C, iron, potassium, calcium, and magnesium. It contains enzymes that help to digest food faster and in treating indigestion. Bay leaves act as stress-buster as well. The presence of linalool in bay leaves can lower the level of stress hormones in the body. Linalool's anti-proliferative activity is used against various cancer cells. Another vital component of bay leaf is Rutin, which strengthens our heart.

Fennel is a yellowish-green herb. Its seed is used as a spice. It is used as a mouth freshener and digestive aid. Fennel seeds are rich in potassium, which helps in controlling the blood pressure and heart rate. It can help in curing constipation, bloating, and indigestion. Fennel seed oil is used to relieve coughs, bronchitis, and joint pains.

Cinnamon is a spice obtained from the inner bark of an evergreen tree. It is widely used in weight loss, gum disease, and releasing nervous tension. It is a rich source of anti-oxidants. Its regular

use prevents influenza. Research studies show that cinnamon is effective in reducing bad cholesterol and stabilizing the good cholesterol. Cinnamon contains cinnamaldehyde that helps to fight various kinds of bacterial and fungal infections. It helps to cure acne, skin allergies, cuts, wounds, and rough feet. It helps in maintaining the blood sugar level and diabetes.

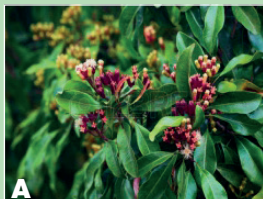
Cumin is an annual herb. The dried seeds are used as a spice. Cumin seeds are useful in treating indigestion, diarrhoea, piles, and amnesia. Diluted cumin water is antiseptic and helpful in relieving common cold and fever.

Asafoetida is a resinous gum obtained from a perennial herb. It is an effective remedy for several diseases of the stomach. It is useful in toothache, asthma, and blood pressure. It is anti-bacterial and antifungal.

Dr. Manisha Agarwal Garg is Coordinator of Nav Urja Sanchar VIPNET Club (VP-UK0039); Anant Bhaskar is the Director at HaritaDhara Research Development and Education Foundation (HRDEF), Dehradun, Uttarakhand.

TEST YOUR SPQ (SPICE QUIZ)

1. IDENTIFY THESE PLANTS



- Which part of the Cinnamon plant is used a spice? _____
- Curry leaf is a cure for _____
- Which part of Clove plant is used a spice? _____

CHOOSE THE CORRECT ANSWER

- Part of the Turmeric (Haldi) plant used as a spice - a. Rhizome b. Root c. Leaf
- Which part of the Asafoetida plant is used as a spice? - a. Fruit b. Seed c. Resinsprizes.

Send us the correct answers of the quiz at curiosity@vigyanprasar.gov.in to win exciting prizes.

गुरु

अलीशा तिवारी

तेरा आभार है मुझपर, जो इतनी खुशकिस्त हूँ मैं!

मेरी हर सफलता का श्रेय जाता है तुझे

मुझे इतना काबिल बनाया की "सर्वश्रेष्ठ" आती हूँ मैं।

जीवन में माता-पिता के बाद जिसे पहला दर्जा देते हैं हम

आदर सत्कार से जिसे बोलते हैं हम,

॥ हे गुरु तुझे हैं मेरा शत शत नमन ॥ (2)

अशिक्षा के अंधकर से शिक्षा के उजाले की राह हमें

जिसने दिखाया है,

हमारा आज और भविष्य जिसने सुधारा है!

किन् शब्दों में तेरा शुक्रिया करू जिसने हमें इतना

काबिल बनाया है!

हमारी हर समस्या को जिसने सुलझाया है,

देश के लिए हमें जिसने अपना कर्तव्य सिखाया है,

॥ हे गुरु, मैंने अपना सर तेरे आगे झुकाया है ॥ (2)

आपके नाम अनेक पर काम एक!

हमेशा हमें गिर कर, अपने पेटों पर उठना सिखाया है।

देश के भविष्य को वो बनाते हैं।

सपने देखना और उनको साकार करने की

शक्ति देते हैं।

जैसे कुहार, देता आकार।

कच्ची मिट्टी से घड़े को। (2)

जैसे लोहार, देता आकार।

कुंद लोहे को, दिव्य अस्त्र मे!

गर मैं चाँद, तो सूर्य आप हैं, बिन आपके, मैं अमान्य हूँ।

॥ बारम्बार नमन है आपको, बिन आपके

में मंद हूँ। (2)

॥ हे गुरु, तुझे हैं मेरा शत शत नमन ॥

तुझे हैं मेरा शत शत नमन

अलीशा तिवारी
छात्रा, कैम्ब्रिज इंटरनेशनल स्कूल, मोहाल, इन्स्टीट्यूट
माइंड्स VIPNET क्लब (VP-HP0025)

SCIENCE QUIZ

Sachin C Narwadiya

1. Chapman Cycle explains the generation and degeneration of which layer of the atmosphere?
A. Carbon di oxide
B. Oxygen
C. Ozone
D. Nitrogen
2. What is the optimum height from ground at which production of ozone takes place?
A. at 10 km
B. at 20 km
C. between 20-45 km
D. above 50 km
3. Which immunity is carried by an individual at birth?
A. Adaptive Immunity
B. Acquired Immunity
C. Innate Immunity
D. T-cell mediated immunity
4. According to Rowland & Molina and Crutzen which gas lasts in the atmosphere for around 10-100 years?
A. Helium
B. Iso-propane
C. CFCs
D. Methane
5. Which time of the day sees the maximum ozone production?
A. 12 AM- 04 AM
B. 04:00 AM – 08:00 AM
C. 08:00 AM – 18:00 PM
D. 18:00 – 24: 00 PM
6. Who said, "Let's Food be Thy Medicine".
A. Luis Pasture
B. Hippocrates
C. H. Khurana
D. Robert Koch
7. How many Vitamins are required for a healthy life?
A. 32
B. 18
C. 22
D. 16
8. Which of the following spice contains the anti-inflammatory agent curcumin?
A. Black Pepper
B. Turmeric
C. Clove
D. Garlic
9. What are the possible consequences of taking high Zn content food?
A. Depletion of Cu
B. Increased absorption of Mg
C. Depletion of Na
D. Increased absorption of K
10. Which category of defense mechanism is constituted by skin and guts?
A. Secondary
B. Primary
C. Tertiary
D. None of above

The author is Scientist 'C' at Vigyan Prasar.
Email: snarwadiya@gmail.com

Send us the correct answers of the quiz at
curiosity@vigyanprasar.gov.in to win exciting prizes.

मैं ही तो हिंदुस्तान हूँ!

हिंदुस्तान केवल एक देश का नाम नहीं अपितु, एक प्राचीन, सुदृढ़ व सम्य संस्कृति है। विविधता में एकता इसकी अद्वितीय पहचान है। अपने देश के लिए प्रेम और सोहाद्र की भावना हर जीव, निर्जीव, वस्तु अथवा प्राणी के भीतर इस कदर निहित है कि वो, अपने आप को हिंदुस्तान का भाग ही नहीं, अपितु स्वयं को ही हिंदुस्तान मानता है। इसी विचार का चित्रण आगे की पंक्तियों में किया गया है:-

राधा गुप्ता

कहीं लहलहाते खेतों की बाली,
कहीं बागों में झुकती, आमों की डाली,
कुदरती भोजन की थाली,
शाकाहार का मैं पैगाम हूँ!
मैं ही तो हिंदुस्तान हूँ!

भारत को रचता, मैं हूँ निर्माता
योग से सबको जोड़ता जाता!
कहीं पुल हूँ, कहीं मैं बाँध हूँ!
कहीं कोयला, कहीं लोहा,
कभी सोने, हीरो की खान हूँ!
मैं ही तो हिंदुस्तान हूँ!

कहीं पावन बहती नदियाँ हूँ!
कहीं गगन चुंबी पहाड़ हूँ!
कहीं तड़ित उत्पादक जल प्रपात,
कहीं प्रकृति का श्रृंगार हूँ!
मैं ही तो हिंदुस्तान हूँ!

कभी मंदिर, कभी मस्जिद का स्वर,
कभी गुरुद्वारा, कभी गिरजा घर,
कभी बाईबल, कभी गुरु ग्रंथ हूँ मैं,
कभी गीता कभी कुरान हूँ!
मैं ही तो हिंदुस्तान हूँ!

कभी अन्न उगाता किसान हूँ!
कभी देश का रक्षक मैं जवान हूँ!
कभी अन्वेषण कभी अनुसंधान हूँ!
मैं ही जय जवान हूँ,
जय किसान, जय विज्ञान हूँ!
इस देश की खातिर जीवन अर्पण,
देश की आन-बान और शान हूँ!
मैं ही तो हिंदुस्तान हूँ!

मुझमें रची बसी शहादती गाथाएँ,
मेघदूत सम गरजती वीरागनाएँ,
तिरंगा मेरा लहराता आँचल,
मैं तिरंगे का अभिमान हूँ!
मैं ही तो हिंदुस्तान हूँ!

है विश्व गुरु मेरी पहचान,
दुनिया को सिखाऊँ शांति ज्ञान,
पर कमजोर नहीं, पुरजोर हूँ मैं!
मातृ भूमि का आत्म सम्मान हूँ!
मैं ही तो हिंदुस्तान हूँ!

हाँ मैं ही तो...हिंदुस्तान हूँ!
।।राधा गुप्ता।।

राधा गुप्ता
समन्वयक, अभिनव विज्ञानक्लब (VP-DL0149)

IMPACT OF LOCKDOWN DUE TO COVID-19 PANDEMIC ON SOME ASPECTS OF RIVER GANGA AND MAJOR TRIBUTARIES

Peeyush Gupta

The Ganga basin is one of the most densely populated regions and the largest groundwater repositories on the earth. About 43% of the population of India lives in the Ganga basin that stretches over 860,000 km² covering 26.3% of the country's total geographical area. The Basin extends over the states of Uttarakhand, Himachal Pradesh, Haryana, Delhi, Uttar Pradesh, Bihar, Jharkhand, Rajasthan, Madhya Pradesh, Chhattisgarh and West Bengal.

The nationwide lockdown to contain the spread of the novel coronavirus (COVID-19) in India was announced on 25 March and phased relaxation started on 8 June. Centre for Ganga River Basin Management and Studies (cGanga) led by the Indian Institute of Technology Kanpur with mandate from National Mission for Clean Ganga (NMCG), Ministry of Jal Shakti, Government of India and support from State Mission for Clean Ganga (SMCG) in Uttar Pradesh and other agencies in Uttarakhand and Delhi conducted extensive sampling for assessing water quality in selected stretches of River Ganga and some of her major tributaries. Many important visible aspects were captured through photographs taken on ground and through drones. Perception of local people was captured through questionnaire survey. cGanga conducted such studies involving its constituent organizations and partners such as IIT Roorkee, IIT Delhi, IIT Kanpur, IIT Kharagpur, WWF-India, WII Dehradun and NEERI Nagpur.

Field measurements were done to

estimate depth of water, top width, surface velocity, temperature and dissolved oxygen. Water samples were taken, wherever possible from left and right banks as well as centre of the rivers. Water samples were also collected from some major drains. Water quality parameters such as pH, alkalinity, hardness, electrical conductivity, total suspended solids and total dissolved solids, turbidity, biochemical oxygen demand, chemical oxygen demand, ammoniacal nitrogen, total Kjeldahl nitrogen, total phosphorous, faecal and total coliform, and some important anions and cations including heavy metals were analysed in the laboratory.

OBJECTIVES

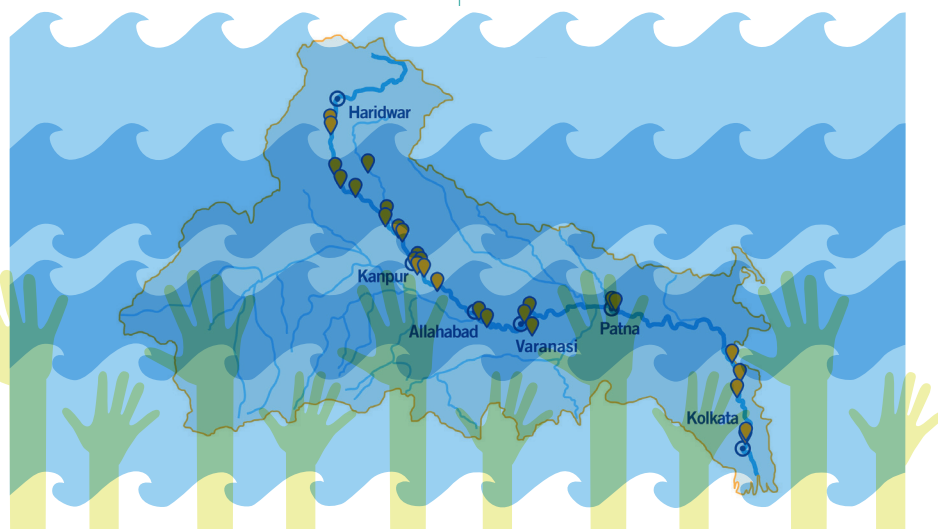
Assess the condition of river through (i) visual aids, (ii) some physical parameters of rivers and drains (iii) stakeholder's perspective through questionnaire survey, and (iv) estimation of some physical, chemical and biological water quality parameters.

Compare the condition of river pre- and post-lockdown with that during the lockdown period.

Draw lessons for policy framework for restoration and conservation of rivers.

SOME RESULTS

Dissolved Oxygen (DO) in water bodies is the single most significant water quality parameter that determines the health of indigenous freshwater flora and fauna (biota). DO levels are influenced by water temperature, biochemical oxygen demand for oxidation of organic matter (BOD), oxidation of ammoniacal nitrogen to nitrite and then to nitrate (referred as nitrification), diffusion of oxygen in water from air (referred as reaeration), production of oxygen through photosynthesis mostly by algae, and demand of oxygen for respiration (again mostly for algae). DO levels are subjected to diurnal variation and the lowest or critical dissolved oxygen levels are expected just before dawn.



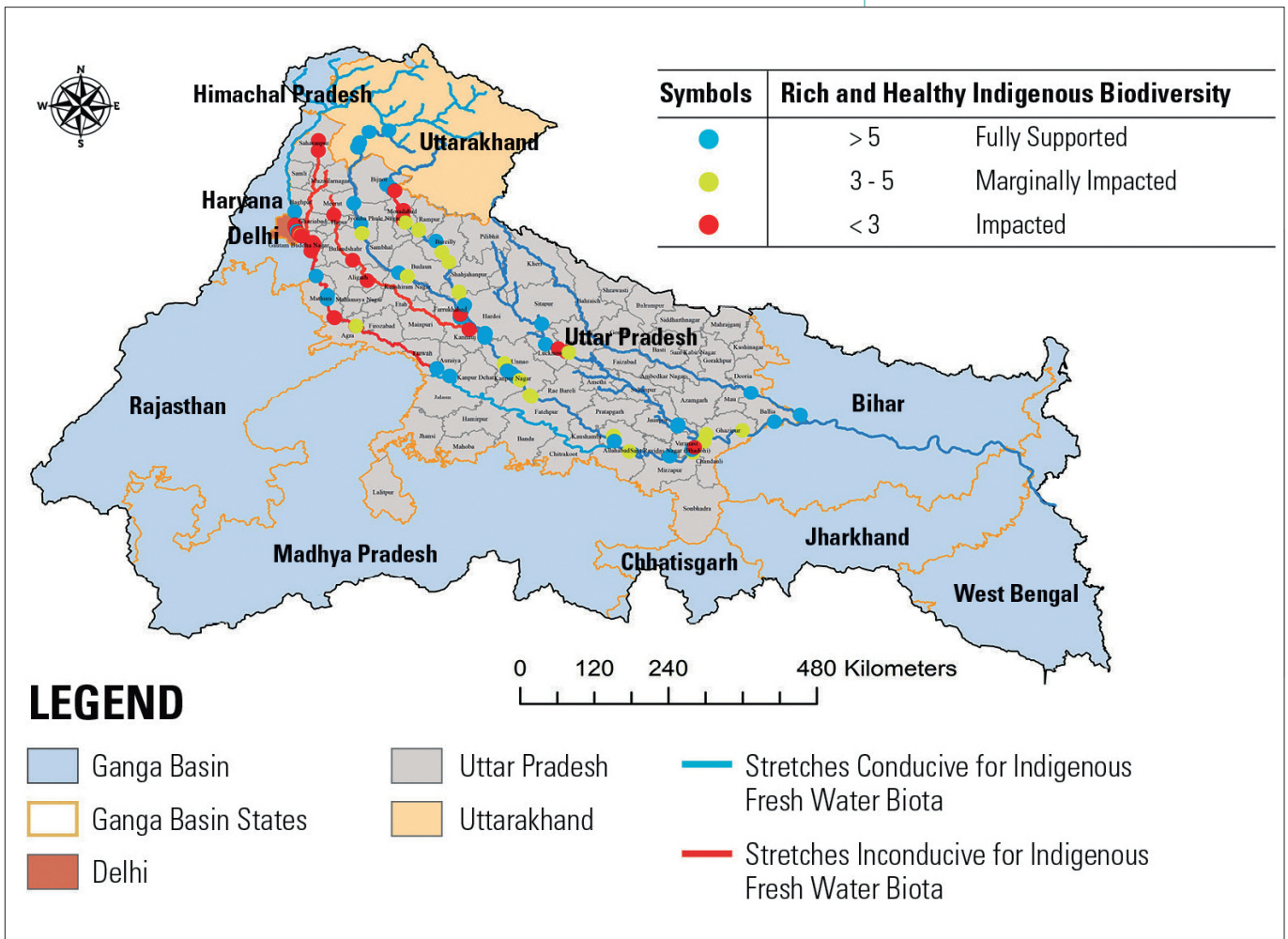



Figure1: Status of Main Stem of River Ganga and her Major Tributaries based on CDO as the most Significant Water Quality Parameter to Support Healthy Indigenous Aquatic Flora and Fauna (Biota)

The most conservative values of Critical Dissolved Oxygen (CDO) are estimated considering water temperature, BOD, nitrification, algal respiration, observed DO values and reaeration. Figure 1 depicts the levels of CDO at sampling locations and the corresponding river stretches.


Total Coliform (TC) count is taken as an indicator for assessment of pathogen (disease-causing microbes) levels. Based on Most Probable Number, MPN of TC and health statistics available for the Kumbh Mela at Haridwar, held during 14th January to 28th April 2010, Human Health Risk (HHR) on interaction with river for spiritual


purposes that includes spiritual “dip” and “aachman” has been assessed in the context of large congregation and to the people taking daily dip on the banks of the river. Figure 2 depicts HHR at the sampling locations.

HIGHLIGHTS

 Critical Dissolved Oxygen values reveal that main stem of river Ganga supports healthy indigenous freshwater flora and fauna (biota) except for some short patches in the vicinity of confluence of drains and tributaries that bring in sewage and industrial effluents. The total length of these patches is estimated to be less than

5% of the entire over 2,500 km of the journey. Gomti are marginally to heavily impacted and are unfavourable in supporting indigenous aquatic flora and fauna (biota).

 River Ganga from her multiple origins in Uttarakhand until exit from the state is conducive and safe for human interaction from water quality consideration (negligible to low/marginal human health risk).

 The main stem of river Ganga in the state of Uttar Pradesh is also fairly conducive for spiritual interaction that includes “dip” and “aachman” with low to marginal risk for human health.

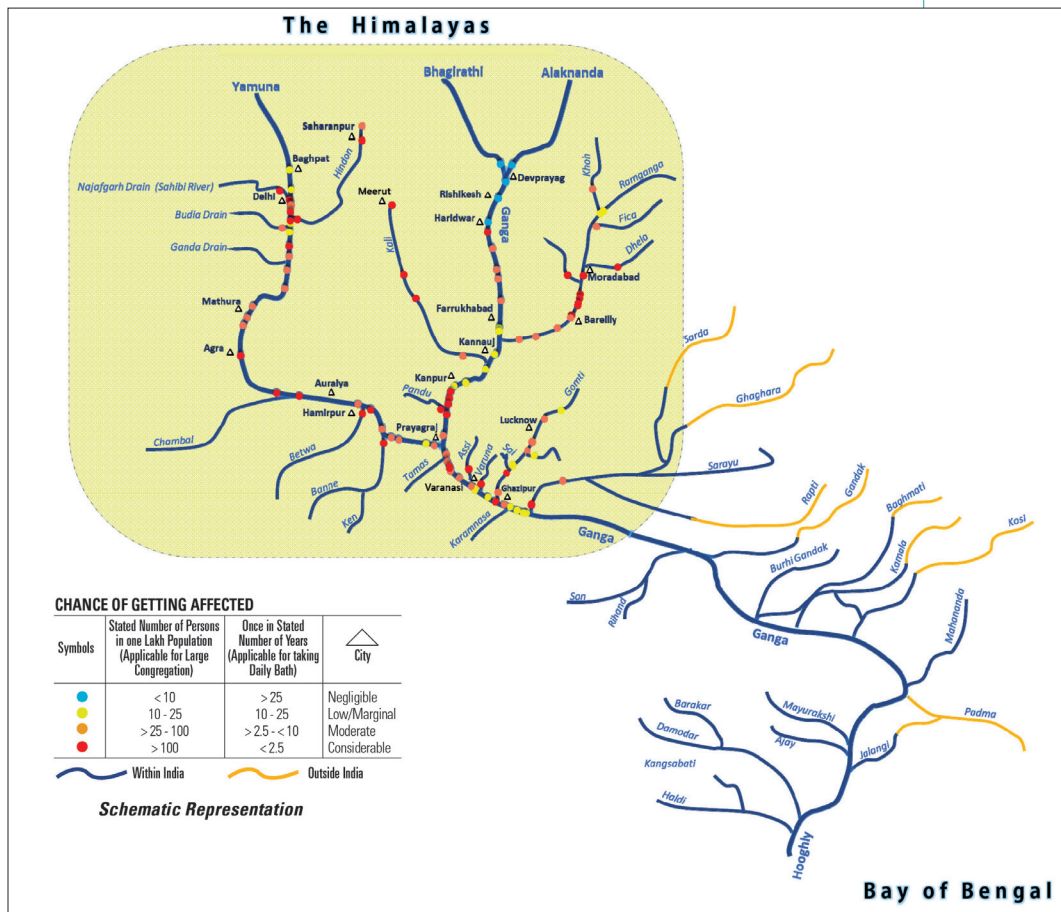


Figure2: Depiction of Human Health Risk on Spiritual Interaction with Rivers

IMPACT OF LOCKDOWN

Aesthetics of the river at several places has certainly improved during the lockdown period as captured through drone surveys. Also, water quality of the river Ganga has improved and safe for spiritual interaction includes “dip” and “Aachman”. This is perhaps due to negligible floating population because of no tourists due to lockdown. Also, at few places, particularly in Kanpur, negligible discharge of industrial effluents resulted in improved condition of the river. However, further analysis is in progress to assess impacts on river

conditions due to lockdown.

ACKNOWLEDGEMENTS

C-Ganga, NMCG received the support from state agencies of Uttarakhand, Delhi and Uttar Pradesh, particularly local administration of all concerned districts including police personnel and administration of IITs at Kanpur, Roorkee and Delhi is gratefully acknowledged.

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Check your knowledge related to department of water resources, river development and Ganga rejuvenation. Give the full form of the acronyms provides below:

ACRONYM	HEADQUARTERS	FULL FORM
NMCG	New Delhi	
GKC	New Delhi	
C-Ganga	Kanpur	
NWM	New Delhi	
NIH	Roorkee	
NWIC	New Delhi	
CWC	New Delhi	
CGWB	Faridabad	
CSMRS	New Delhi	
NWA	Pune	
GFCC	Patna	
NWDA	New Delhi	
WII	Dehradun	
CIFRI	Barrackpore	
FRI	Dehradun	
NEERI	Nagpur	
SoI	Dehradun	
NRSC	Hyderabad	
CPCB	New Delhi	
MoEF & CC	New Delhi	

However, in the vicinity of confluence of drains and tributaries that bring in sewage and industrial effluents into the river, River Ganga may not be conducive and may pose moderate to considerable human health risk.

Significant length of some of the major tributaries such as Hindon, Yamuna, Kali, Ramganga and Gomati are unfavourable and unsafe for taking a “dip” and performing “aachman” due to low/marginal to considerable human health risk.

Send us the correct answers of the quiz at curiosity@vigyanprasar.gov.in to win exciting prizes.



School Level Science Fair

On the occasion of National Science Day 28th February 2020, Kalpana Chawala Science Club (VP-TL0002) organized a school level science fair for the students of ZPHS, Narayanagiri. Around 80 science concepts were explained to students of different grades using science models.

Answers of Curiosity October Issue

Brain Developer Quiz: 1. Heuristic; 2. John McCarthy; 3. Fifth Generation; 4. Sophia; 5. Adam Osborne; 6. Machine Learning; 7. LISP (LISt Processing); 8. Chatbot; 9. LOGO; 10. Blackcomb

IDENTIFIES CITIES/TOWNS ON THESE CONFLUENCE POINTS

RIVERS	PLACE OF CONFLUENCE
Alaknanda & Bhagirathi	Devprayag, Uttarakhand
Ganga & Yamuna	Prayagraj, Uttar Pradesh
Ganga & Kosi	Katihar, Bihar
Yamuna & Betwa	Hamirpur, Uttar Pradesh
Ganga & Gandak	Vaishali, Bihar
Yamuna, Chambal, Pahuj, Sind & Kuwari	Etawah, Uttar Pradesh



Making of project

Promoting Health & Hygiene

The students of Cambridge International School, under the guidance of the Ignited Mind Science club, Kullu (VP-HP0025), conceived an idea of using the disposed of sanitary napkins and diapers in road filling. The students develop a napkin shredder machine to cut the napkins into small pieces, which can then be mixed with coal tar and used for road filling.



Jar Terrarium Activity

BCM VIPNET Science Club (VP-PB0150), Ludhiana conducted a Jar terrarium making activity from 17th August 2020 to 24th August 2020. The students were told about the eco-system and its components, based on which students made their own terrarium.



Eco-friendly Ganesha Making Activity

Gold Science Club, Ahemdabad (VP-GJ0203) conducted a virtual Ganesha making activity for the students of Kalorex Public School of Grade 5 to 10. The students were encouraged to save the environment and enjoy the festivals in an eco-friendly manner.

VIPNET ACTIVITY STARS!

Brain Developer Quiz:

1. G. Suresh, Hyderabad, Telangana, India - 500 090
2. D. Bhargabi Dora, Rajdhani VIPNET Science club (VP-OD0230)



Science Model Making Workshop

Kalyan Regional Community Science Centre, Bhavnagar (VP-GJ0013), organized a virtual science model-making workshop on 23rd September 2020. The science models were made using the material available at home to explain the Centre of gravity. The workshop was conducted live on YouTube.

VIPNET ACTIVITY STARS!

Identifies Cities/towns on these confluence points

1. Sawayam Swagat Kar
AT Tulagaon, PO. Narla Road Kalahandi, Odisha
2. Anju Kumar
Secretary, Karonsia Vigyan Club (VP-UP0023),
44, Gali Chikan, Sirsaganj, Firozabad, 283151

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