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IMPACT OF COVID-19 PANDEMIC ON THE ENVIRONMENT: A GENERAL REVIEW FOR THE LOCKDOWN PERIOD IN INDIA FROM MARCH 2020 TO APRIL 2020

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ABSTRACT

Since its origin in December 2019, COVID-19 or SARS-CoV-2, has spread throughout the world in a very short time and like many countries, India too, adopted strict lockdowns measures. With the imposition of mandatory quarantine, restrictions in travel, curbs in industrial activities, the crisis period has proved to be a blessing for the environment. Various reports have suggested improvements in the quality of air, cleaner rivers and a bloom in wildlife. India has always been a hub of pollution - with a large population, congested cities and towns, heavy traffic and polluting industries- the air quality index (AQI) values have always been significantly high in most cities. However, with the implementation of the national lockdown, cities in India, such as Delhi, witnessed significant improvements in air quality. Major rivers such as the Yamuna and Ganga saw improvements in its water quality. This review aims to discuss the effect of the COVID-19 lockdown on environment during pre and post lockdown of this pandemic situation.

INTRODUCTION:

The coronavirus disease 2019, abbreviated as COVID-19, is an infectious disease from a newly discovered strain of the coronavirus which is named as Severe Acute Respiratory Syndrome Coronavirus 2 or SARS-CoV-2. Most people infected with the virus experience mild symptoms like fever, dry cough and tiredness and recover without requiring any special treatment or hospitalization. However, the disease, is most likely to be severe among the elderly and those individuals with comorbidities such as cardiovascular disease, hypertension and diabetes, etc.[1]

SARS-CoV-2, originated from Wuhan province in China during December 2019. Due to the high transmissible rates of COVID-19, the virus spread at a very fast pace forcing countries throughout the world to adopt various precautionary measures. Mass scale COVID-19 screening tests, mandatory 14-day quarantine periods, social distancing and adopting good hygiene practices -wearing masks and hand sanitization were some of the initial methods adopted. Soon however, regional and national lockdowns were implemented to contain the spread of the virus, bringing economic and social activities to a halt.[2]

To curtail the spread of the virus, on March 24, 2020, India went under a complete national lockdown for an initial 21 days, which was further extended till 17th May in various phases. International travel was subsequently banned, Indian railways shut down its operations, interstate bus travel was suspended and all vehicular movement was restricted. Non-essential industrial activities and construction projects were also suspended.[3] In addition, restrictions were imposed on social gathering events, mandatory 14-day quarantine for COVID patients were implemented, along with maintaining adequate social distancing and use of personal protective equipment's such as masks, gloves and face shields. The lockdown, no doubt, has severely impacted the economies of all the major nations, including India.[4] But as rightly said," Every dark cloud has a silver lining" - the same stands true for the current situation. The silver lining here is the positive impact of the lockdown on the environment. The implementation of lockdown and the limited interaction between man and environment has given Mother Nature a time to heal.

The reduction in greenhouse gas emission was first noticed in China, when the pandemic began.[5] A similar trend was observed across the world with the pandemic's spread and the subsequent lockdowns enforced by various countries. In 2020, a study published by Nature Climate Change, reported the drastic reduction in global carbon emissions during the lockdown by nearly 17% in early April 2020 as compared to the mean 2019 level.[6] Global CO_2 emissions were around 33 million gigatons (Gt) in 2019 whereas in 2020, they are expected to reach 30.6 Gt, almost 8% lower than in 2019. In fact, this is projected to be the lowest level since 2010.[7] Air, too, has become cleaner. Air quality has improved drastically mainly because of the reduction in factory and traffic emissions of carbon dioxide (CO_2), nitrogen oxides (NO_x), related ozone (O_3) formation and particulate matter (PM). The unprecedented restrictions on travel and work and a ban on industrial activities due to coronavirus lockdown has insured several days with good quality air in otherwise choked cities. Delhi, the capital city of India and also one of the most polluted cities in the world, has recorded unimaginably low Air Quality Index (AQI) during the period of the lockdown (months of March and April, 2020) and witnessed clear blue skies.[8,9]The quality of water has improved. Pollution levels of various rivers in India, such as the Ganga and Yamuna, which are among the world's most polluted rivers, have declined.

However, medical waste, especially the use of single use plastic, mainly due to the increased use of Personal Protective Equipment's (PPEs), is increasing at a very fast pace, especially in localities surrounding COVID-19 dedicated hospitals and its proper disposal has become a big challenge.[10]

This review aims to discuss the effect of the COVID-19 lockdown on environment during pre and post lockdown of this pandemic situation.

Air Quality Assessment during National Lockdown between March - April 2020 due to COVID-19 with reference to National Capital Region (NCR), India

Clean air is a major aspect for survival. However, human activities are continuously deteriorating the quality of air. Air pollution is defined as the release of harmful gases, dust, smoke, mist or biological molecules in to the air which are precarious for human existence on Earth. The substances that produce air pollution are called air pollutants. Pollutants are of two types- primary and secondary pollutants.[11] Primary pollutants are directly emitted from the source and remain in that form while secondary pollutants are formed by chemical reaction between the primary pollutants and any other constituent of the environment. Nitric oxides, smoke, dust and sulphur dioxide are examples of primary pollutants. Smog, ozone, sulphur trioxide, etc. are examples of secondary pollutants.[12] Burning of fossil fuels, gases emitted from motor vehicles and industries, forest fires, volcanic eruptions, mining operations, gases generated from waste in landfills, use of pesticides, insecticides and fertilizers in agricultural activities are various causes of air pollution.[13] Air pollution is known to cause various cardiovascular and respiratory diseases like lung cancer, asthma and bronchitis. As per a report from the World Health Organization (WHO) in 2016, 4.2 million and 3.8 million deaths were caused due to ambient air pollution and indoor air pollution respectively.[14] According to the same report, 91% of the world's population was breathing air of a lower air quality than that set by the WHO guidelines. All of the major metropolitan cities of India (New Delhi, Mumbai, Kolkata, Chennai) have witnessed continuous degradation of air quality during the past few decades, often exceeding the standards set by WHO and the Central Pollution Control Board (CPCB), India. In 2019, the Ministry of Earth, Forest, and Climate Change (MoEFC) implemented the National Clean Air Programme (NCAP)- a five-year action plan with the sole aim of reducing the nationwide concentration of particulate matter.[15]

With the spread of the COVID-19 pandemic and the mandatory national lockdown (initially from the last week of March 2020 to mid-May 2020) imposed across the country, all industrial, travel and economic activities came to a halt. As revealed by data analysis and its comparison with the previous years' data, air quality has seen an unimaginable improvement during the period of the lockdown.[16,17] More than 80 Indian cities have observed a drastic reduction in air pollution.[18, 19] Delhi and the neighbouring cities of Noida and Ghaziabad in the state of Uttar Pradesh, one of the most polluted areas of the world with typical AQI in the poor or very poor-quality range during the months of March to April, had improved to the Satisfactory range.[20,21] However, it must be emphasized that this is a fugitive environmental improvement as emissions will most likely rise to previous levels when economic activities pick up as the crisis ceases.

AQI Range:

AQI Categories	Range
Good	0-50
Satisfactory	51-100
Moderate	101-200
Poor	201-300
Very Poor	301-400
Severe	>401

Comparison of Air Quality Index (AQI) for 2018 and 2020 for Delhi, Ghaziabad and Noida during the Phase I of National Lockdown (March 25 to April 15) [20,21]

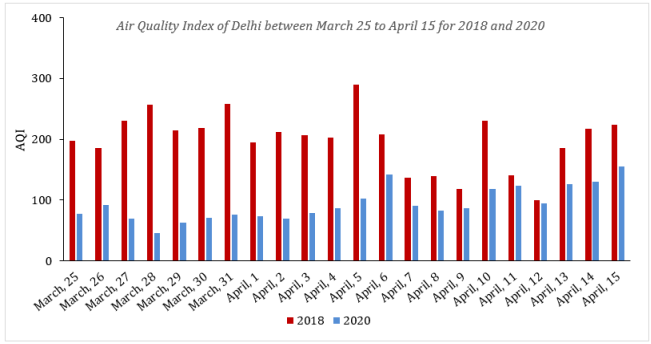

Figure 1: Comparative assessment of Air Quality Index of Delhi during pre-COVID Phase (March 25- April 15, 2018) and Phase I of the National Lockdown (March 25 – April 2020)

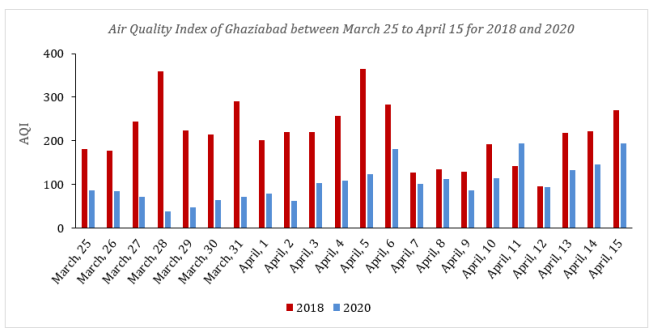

Figure 2: Comparative assessment of Air Quality Index of Ghaziabad, Uttar Pradesh, during pre-COVID Phase (March 25- April 15, 2018) and Phase I of the National Lockdown (March 25 – April 2020)

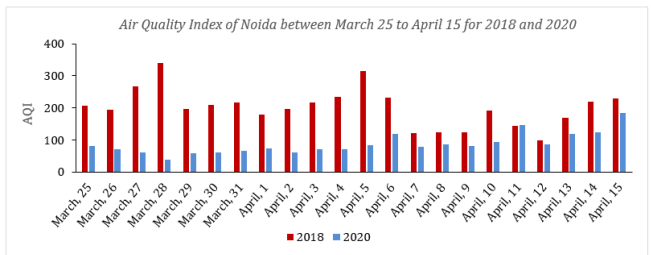

Figure 3: Caomparative Assessment of Air Quality Index of Noida, Uttar Pradesh during pre-COVID Phase (March 25- April 15, 2018) and Phase I of the National Lockdown (March 25 – April 2020)

Water Quality Assessment of the Rivers, Yamuna and Ganga during Phase I of National Lockdown (March to April 2020)

Water, is one of the most important commodities which man has exploited more than any other resources for the sustenance of his life. Even though a renewable resource, water continually gets polluted due to increasing globalization and urbanization. Water can be regarded as polluted when its quality or composition changes, either naturally or as a result of various human activities so as to become less suitable for drinking, domestic, agricultural and industrial uses for which it would have been otherwise suitable in its natural or unmodified state.[11] Water pollutants are mostly in form of hazardous chemicals. Discharge of untreated hazardous chemical waste from industries, construction sites, power plants and domestic sewage are the major causes for severe water pollution. Rivers in India are extremely polluted, rendering the water unhealthy for consumption or use. With the implementation of a complete lockdown due to the Coronavirus pandemic, various provisions were made for closing of industries, construction activities, transportation etc. The Central Pollution Control Board (CPCB), India, reported significant improvements in various parameters of water quality in the river Yamuna during this lockdown period.[23,24,25] The concentrations of benzene, electrical conductivity (EC), dissolved oxygen (DO), biological oxygen demand (BOD), and chemical oxygen demand (COD) were measured and indicated a reduction by 1- 10%, 33-66%, 51%, 45-90% and 33- 82% respectively for the period from 1st March to 7 April 2020.[11] The data was analysed at five different monitoring stations along the river Yamuna and studied in two phases- a pre-lockdown phase (11-23 March, 2020) and lockdown phase (24 March – 7 April, 2020).

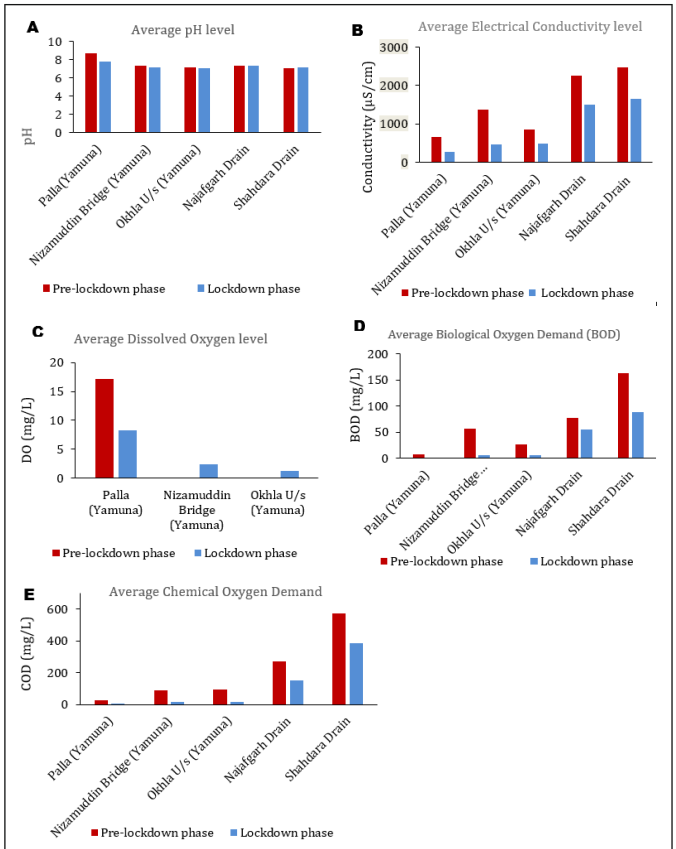

Figure 4: (A) Average pH level, (B) Average conductivity level, (C) Average Dissolved Oxygen level, (D) Average biological oxygen demand, (E) Average chemical oxygen demand in the Yamuna River at Palla, Nizamuddin, Okhla U/S, Najafgarh and Shahdara monitoring stations during pre-lockdown (March 11-24, 2020) and lockdown (March 25-April 7, 2020) phase.

As a result of the nationwide lockdown, industries which were known to regularly discharge effluents into the river Ganga have been shut.[26] Furthermore, the lockdown ensured the closure of the various Ghats in Haridwar for the general public. Consequently, holy dips were banned and dumping waste was curtailed, resulting in cleaner waters. The water quality of the river Ganga at Har-ki-Pauri, Haridwar, had also been classified as 'fit for drinking'.[27] According to the Uttarakhand Environment Protection and Pollution Board, there has been a 34% reduction in fecal coliform and 20% in BOD in river Ganga at Har-ki-Pauri Ghat (Haridwar) since the enforcement of lockdown. In addition, the Uttar Pradesh Pollution Control Board (UPPCB) also reported significant improvement in water quality of the Ganga River across various parameters such as DO, BOD, etc.[28-30] Figures 5, 6, 7 and 8 show variations in DO, BOD, total coliform and faecal coliform respectively at various locations along the river Ganga from Bijnor (Uttar Pradesh, India) to Howrah Bridge (West Bengal, India).[17,18,19]

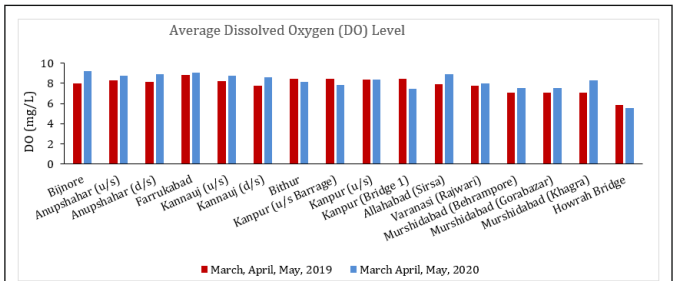

Figure 5: Comparative assessment of DO (mg/L) of Ganga River during pre-COVID phase (March, April, May 2019) and lockdown phase (March, April, May 2020)

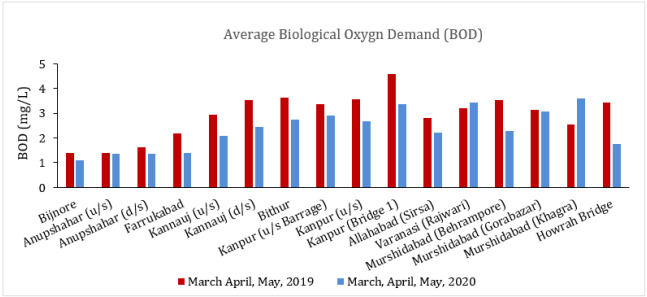

Figure 6: Comparative assessment of BOD (mg/L) of Ganga River during pre-lockdown phase (March, April, May 2019) and lockdown phase (March, April, May 2020)

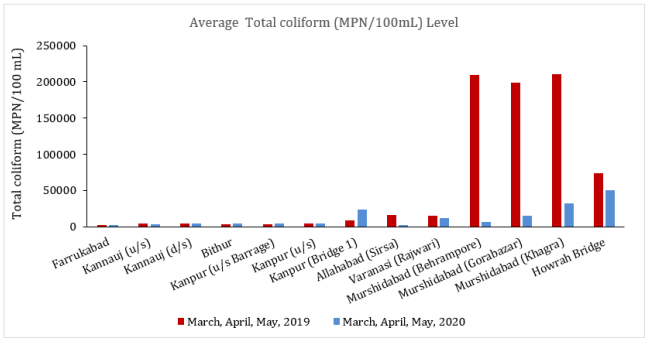

Figure 7: Comparative assessment of Total coliform (MPN/100 mL) in Ganga River during pre-lockdown phase (March, April, May 2019) and lockdown phase (March, April, May 2020)

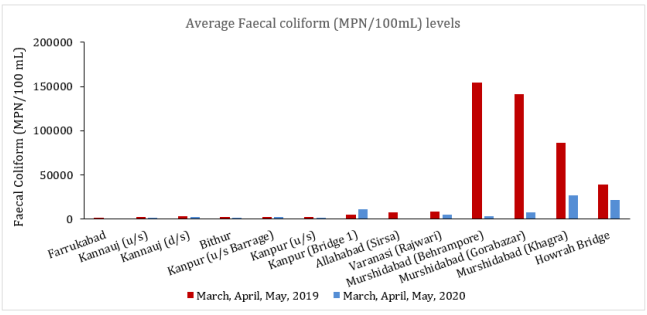

Figure 8: Comparative assessment of Faecal coliform (MPN/100 mL) in Ganga River during pre-lockdown phase (March, April, May 2019) and lockdown phase (March, April, May 2020)

Impact of COVID-19 on Increased Plastic Pollution and Waste Disposal:

Although improvements in the quality of air and water were reported with the implementation of the COVID-19 lockdown, a significant increase in plastic pollution was observed since the COVID-19 outbreak. Most personal protective equipment- masks, face shields, gloves and protective gowns are commonly made of plastic. Their use has significantly increased during the treatment of Covid-19. However, their proper use and disposal serves to be a major concern to the environment. Enormous amounts of single-use plastic wastes have been generated globally since the outbreak of COVID-19. According to a recent report by Palasiani et.al, the amount of plastic waste generated worldwide since the COVID-19 outbreak is estimated to be 1.6 million tons/day.[20] Further estimates by the same study indicate approximately 3.4 billion single-use facemasks or face shields will be discarded daily due to the COVID-19 pandemic worldwide. Asia, with the highest population, is projected to generate nearly 1.8 billion discarded facemasks per day. India with a population of nearly 1.3 billion, is estimated to generate at least 386 million contaminated masks per day if all its citizens wear and discard disposable facemasks.

Plastic pollution has always been a source of environmental concern, especially for India. According to a report published in 2017-2018 by the Central Pollution Control Board, India produces approximately 9.4 million tons per annum of plastic waste, which amounts to approximately 26,000 tons of waste per day. However, only 60% of the plastic produced is recycled, the remaining is left unattended, causing land, air and water pollution.[21,22] To decrease the environmental footprint of plastics and its harmful effect on the environment, many initiatives have been taken on both national and regional levels- including environmental taxes or legislative bans on the use of single-use-plastic (SUPs). Despite the recent progress made in waste management of plastics, there have been widespread drawbacks in the use and management of plastics in the fight against COVID-19 pandemic.[23] Cities throughout India are struggling to manage the dramatic increase in medical waste production. Municipal corporations are overwhelmed with the increased use of single use plastic equipment-face masks, shields, protective gear and other hazardous waste. The increased pile up of plastic disposables has significantly added strain on an already inadequate garbage disposal and recycling infrastructure. Plastic wastes could be seen discarded on the roads and drains.

Image source: Times of India https://www.google.com/url?sa=i&url=https%3A%2F%2Ftimesofindia.indiatimes.com%2Findia%2Fhow-unpopular -plastic-turned-saviour-in-covid-19-fight%2Farticleshow%2F76726087.cms&psig=AOvVaw1QAwURBaQYFFtnLDrY-dw6&ust=1626009392294000&source=images&cd=vfe&ved=2ahUKEwjNl42Ty9jxAhWOyHMBHZN7BfsQjRx6BAgAEA8)

Figure 9: Plastic waste discarded on roads

Overwhelmed and overburdened, some Indian municipalities have followed an extremely flawed system of medical waste disposal and management - relying mostly on landfilling and local burning strategies.[24] The uncontrolled incineration of plastic medical waste is not recommended and significantly contributes to the release of greenhouse gasses along with other potentially dangerous compounds, such heavy metals, dioxins and furans.[25] Ironically, single use plastic bags has been used as a part of relief efforts in all major cities, towns and villages to distribute essentials during the pandemic but is also contributing to a bigger problem of piling up disposables that often leads to clogged drains and polluting water bodies. Improperly discarded non-biodegradable PPEs, made from plastics, pose a threat not only to humans but marine organisms and the environment as a whole. Numerous marine organisms such as fish, turtle, whales and other marine mammals are now at increased risk of entanglement and accidental or indirect ingestion of latex gloves which could lead to severe injuries and death.

CONCLUSION:

Numerous efforts were adopted by governments worldwide to combat the spread of the highly contagious SARS-CoV-2. In India, these efforts included implementation of a national lockdown along with restrictions such as social distancing, mandatory 14-day self-isolation of COVID-19 patients or suspects and the mandatory use of personal protective equipment (masks, gloves, etc.). The implementation of the national lockdown has led to significant gains in terms of reduction in carbon footprint. With restrictions in industrial, travel and economic activities various studies have revealed significant improvement in air quality in cities all across India. Delhi, the most polluted city in the world, witnessed clear blue skies with significant improved AQI. Pollution levels of the two most important rivers in Northern India, the Ganga and the Yamuna, which are among the world's most polluted rivers, have declined significantly during the lockdown period of March-April 2020. However, there has been a substantial increase in the need and consumption of single-use plastic products since the coronavirus outbreak. This has significantly impacted the already existing plastic related pollution problems. Furthermore, the improper disposal of these non-biodegradable medical equipment poses a potential environmental risk. Therefore, research and product innovation in developing eco-friendly and reusable PPE kits made from bio-plastics with higher recyclability should be encouraged. Furthermore, existing waste management systems and its infrastructures should be updated with better and improved plastic waste segregation and recycling.

Declarations:

Author contribution statement:

All authors listed have significantly contributed to the development and the writing of this review article.

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Table 1: Comparative analysis of various water parameters during pre-lockdown (11-23 March, 2020) and lockdown phases (24 March – 7 April, 2020) and their change in percentage (-ve values shows reduction and +ve shows increase) at 5 different monitoring stations along the river Yamuna River.[12,13,14]

Monitoring Station	Phase	pH	EC	DO	BOD	COD
Palla	Pre-Lockdown	8.7	668	17.1	7.9	28
	Lockdown	7.8	273	8.3	2	6
	%Decrease(-ve)/Increase(+ve)	-10	-59	-51	-75	-79
Nizamuddin Bridge	Pre-Lockdown	7.3	1369	ND	57	90
	Lockdown	7.2	460	2.4	5.6	16
	%Decrease(-ve)/Increase(+ve)	-1	-66	NA*	-90	-82
Okhla U/s	Pre-Lockdown	7.2	861	ND*	27	95
	Lockdown	7.1	488	1.2	6.1	18
	%Decrease(-ve)/Increase(+ve)	-1	-43	NA	-77	-81
Najafgarh Drain	Pre-Lockdown	7.3	2251	NA	78	271
	Lockdown	7.3	1501	NA	55	150
	%Decrease(-ve)/Increase(+ve)	0	-33	NA	-29	-45
Shahdara Drain	Pre-Lockdown	7.1	2485	NA	163	574
	Lockdown	7.2	1657	NA	89	383
	%Decrease(-ve)/Increase(+ve)	+1.41	-33	NA	-45	-33

**ND: Not Detected; NA: Data not available*

Table 2: Comparative assessment of DO of Ganga River during 2019 (pre-lockdown) and 2020 (lockdown)

DO (mg/L)	Pre-Lockdown WQ (March, April, May, 2019)	Lockdown - 1 March, 2020	Lockdown - 2 April, 2020	Lockdown - 3 May, 2020	Lockdown period WQ (March, April, May, 2020)
Bijnor	7.97 ± 0.64	9.9	9	8.6	9.17 ± 0.67
Anupshahar (u/s)	8.30 ± 1.39	9.1	8.7	8.4	8.73 ± 0.35
Anupshahar (d/s)	8.10 ± 1.47	9.3	8.8	8.6	8.90 ± 0.36
Farrukabad	8.80 ± 0.79	9.9	8.4	8.8	9.03 ± 0.78
Kannauj (u/s)	8.20 ± 1.57	9.6	8.1	8.6	8.77 ± 0.76
Kannauj (d/s)	7.77 ± 1.40	9.2	8.1	8.4	8.57 ± 0.57
Bithur	8.43 ± 1.70	8.7	8.2	7.4	8.10 ± 0.66
Kanpur (u/s Barrage)	8.43 ± 1.45	9	7.6	7	7.80 ± 0.92
Kanpur (u/s)	8.37 ± 1.46	8.8	8.1	7.9	8.33 ± 0.59
Kanpur (Bridge 1)	8.43 ± 1.32	8.2	7	7.2	7.47 ± 0.64
Allahabad (Sirsa)	7.93 ± 0.42	8.9	9.1	8.8	8.93 ± 0.15
Varanasi (Rajwari)	7.77 ± 0.25	8.3	8.4	7.3	8 ± 0.61
Murshidabad (Behrampore)	7.08 ± 0.59	8.95	6.8	6.85	7.53 ± 1.21
Murshidabad (Gorabazar)	7.04 ± 0.56	8.25	7.6	6.7	7.52 ± 0.85
Murshidabad (Khagra)	7.08 ± 0.51	8.45	9.6	6.9	8.32 ± 1.15
Howrah Bridge	5.86 ± 0.54	5.3	4	7.3	5.53 ± 1.66

Data Source: Uttar Pradesh Pollution Control Board

Table 3: Comparative assessment of BOD of Ganga River during 2019 (pre-lockdown) and 2020 (lockdown)

BOD (mg/L)	Pre-Lockdown WQ (March, April, May, 2019)	Lockdown - 1 March, 2020	Lockdown - 2 April, 2020	Lockdown - 3 May, 2020	Lockdown period WQ (March, April, May, 2020)
Bijnore	1.40±0.17	1.00	1.10	1.20	1.10±0.10
Anupshahar (u/s)	1.40±0.35	1.80	1.20	1.10	1.37±0.38
Anupshahar (d/s)	1.63±0.40	1.90	1.00	1.20	1.37±0.47
Farrukabad	2.17±0.21	1.60	1.20	1.40	1.40±0.20
Kannauj (u/s)	2.93±0.42	2.60	1.70	2.00	2.10±0.46
Kannauj (d/s)	3.53±0.58	2.90	2.00	2.40	2.43±0.45
Bithur	3.63±1	3.20	2.40	2.60	2.73±0.42
Kanpur (u/s Barrage)	3.37±0.59	3.40	2.60	2.70	2.90±0.44
Kanpur (u/s)	3.57±0.59	3.10	2.50	2.40	2.67±0.38
Kanpur (Bridge 1)	4.60±1.22	4.40	3.00	2.70	3.37±0.91
Allahabad (Sirsa)	2.80±0.10	2.40	2.20	2.10	2.23±0.15
Varanasi (Rajwari)	3.20±0.20	3.60	3.10	3.60	3.43±0.29
Murshidabad (Behrampore)	3.53±0.99	4.10	0.00	2.75	2.28±1.37
Murshidabad (Gorabazar)	3.13±0.77	3.32	4.00	1.85	3.06±0.85
Murshidabad (Khagra)	2.54±1.18	3.40	5.50	1.88	3.59±1.15
Howrah Bridge	3.44±1.06	2.00	1.05	2.20	1.75±1.66

Data Source: Uttar Pradesh Pollution Control Board

Table 4: Comparative assessment of Total coliform (MPN/100mL) in Ganga River during 2019 (pre-lockdown) and 2020 (lockdown)

Total coliform (MPN/100mL)	Pre-Lockdown	Lockdown W-1	Lockdown W-2	Lockdown W-3	Lockdown period Average
Bijnore	NA	NA	NA	NA	NA
Anupshahar (u/s)	540±10	NA	NA	NA	NA
Anupshahar (d/s)	423±12	NA	NA	NA	NA
Farrukabad	2333±208	3100	1700	2200	2333±709
Kannauj (u/s)	4000±100	3900	3300	3900	3700±346
Kannauj (d/s)	4700±100	4700	4100	4700	4500±346
Bithur	3500±265	4300	3800	4100	4067±252
Kanpur (u/s Barrage)	3667±416	4900	4900	4300	4700±346
Kanpur (u/s)	4167±231	4000	4100	4900	4333±493
Kanpur (Bridge 1)	8733±577	47000	9400	14000	23467±20510
Allahabad (Sirsa)	16333±1155	3300	2400	2000	2567±666
Varanasi (Rajwari)	15000±1732	14000	7000	13000	11333±3786
Murshidabad (Behrampore)	210000±134907	9150	7000	3350	6500±5815
Murshidabad (Gorabazar)	198333±81342	26500	11000	8000	15167±17821
Murshidabad (Khagra)	210833±106038	86150	9000	2650	32600±69316
Howrah Bridge	73417±45280	50000	30000	70000	50000±20000

NA: Data not available.; Data Source: Uttar Pradesh Pollution Control Board

Table 5: Comparative assessment of Faecal coliform (MPN/100mL) in Ganga River during 2019 (pre-lockdown) and 2020 (lockdown)

Faecal Coliform (MPN/100mL)	Pre-Lockdown	Lockdown W- 1	Lockdown W- 2	Lockdown W- 3	Lockdown period average
Bijnore	NA	NA	NA	NA	NA
Anupshahar (u/s)	233±15	NA	NA	NA	NA
Anupshahar (d/s)	220±10	NA	NA	NA	NA
Farrukabad	1400±0	1500	820	940	1087±363
Kannauj (u/s)	2567±115	1700	1400	1700	1600±173
Kannauj (d/s)	3033±306	2400	2100	2600	2367±252
Bithur	2100±100	1800	1700	1700	1733±58
Kanpur (u/s Barrage)	2233±252	2100	2000	2200	2100±100
Kanpur (u/s)	2667±378	2200	1400	2100	1900±436
Kanpur (Bridge 1)	4800±557	26000	4100	4900	11667±12419
Allahabad (Sirsa)	8033±1168	1700	790	610	1033±584
Varanasi (Rajwari)	9000±1732	8000	3300	5000	5433±2380
Murshidabad (Behrampore)	154167±91892	5900	2400	1550	3283±3961
Murshidabad (Gorabazar)	141667±56006	15650	6000	2850	8167±11209
Murshidabad (Khagra)	85892±85892	70850	7000	2000	26617±57185
Howrah Bridge	38752±38752	22000	17000	26000	21667±4509

NA: Data not available.; Data Source: Uttar Pradesh Pollution Control Board.