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#INVISIBLE THREATS

How Polluted Rivers May Be Contaminating the Air We Breathe

New research reveals that toxins from dirty rivers can become airborne, posing a hidden risk to coastal communities in India.





breeze might carry more than jus ocean mist. Recent studies have uncovered that pollu tants from contaminated rivers can become airborne

through sea spray, potentially affecting the air quality of nearby coastal areas From Water to Air: The Journey of Pollutants

D esearchers from the **K** Scripps Institution of Oceanography at UC San Diego have found that pollutants in coastal waters can transfer to the atmosphere via sea sprav aerosols. These aerosols, formed by breaking waves and bursting bubbles, can carry bacteria, viruses. and chemical compounds inland, exposing people to pol-

India. with its extensive L coastline and numerous rivers, faces similar challenges. Rivers like the Ganga. Yamuna, and Mithi are known for high levels of pollution, often carrying untreated sewage and industrial waste into the sea. During monsoon

sea spray aerosols contained illicit drugs, drug byproducts, and chemicals from tires and personal care products, originating from wastewater and stormwater runoff **Implications for India's Coastal Regions** er concentrations of pollutants in coastal waters. While direct studies on aerosolized pollutants in India's coastal regions are limited. the find-

inhalation cannot be ignored

In India, where air pollution

is already a significant issue.

the addition of aerosolized

water pollutants could exacer-

bate health problems. Coastal

cities like Mumbai. Chennai.

and Kolkata may be particu-

larly vulnerable, given their

proximity to polluted rivers

lutants without direct contact

with the water. In the study,

scientists collected air and

water samples along the coast

near the polluted Tijuana

River. They discovered that

ings from the Tijuana River study suggest a need for further research. Understanding how pollutants transition from water to air is crucial for seasons, the situation worsens as stormwater runoff increas assessing public health risks in coastal communities es, potentially leading to high-

and the sea.

Health Concerns and the Need for Vigilance

The presence of bacteria **L** and chemicals in sea spray aerosols raises concerns about respiratory health, especially for individuals with pre-existing conditions. Although the full extent of health impacts is still under investigation, the potential for exposure to harmful substances through

Moving Forward: Research and Mitigation

r o address this emerging concern. India must prioritize research into the aerosolization of waterborne pollutants. Monitoring air quality in coastal regions and studying the composition of sea spray aerosols can provide valuable insights. Additionally. improving wastewater treatment infrastructure and reducing river pollution are essential steps in mitigating the risk. Public awareness campaigns can also play a role in educating communities about the potential risks and encouraging behaviours that reduce pollution. By taking a proactive approach. India can safeguard the health of its coastal populations and preserve the quali-

tv of its air and water.

The discovery that pollutants can transition from water to air via sea spray aerosols highlights the interconnectedness of our environment. As we continue to combat pollution on multiple fronts, understanding these complex pathways is vital for creating comprehensive solutions that protect both our ecosystems and public health.



Water Wars Weapons!!

When China annexed Tibet, little of the river waters were being consumed on the plateau itself. This meant that nearly all the water was transferred to downstream basins including India, Nepal, China, Bangladesh, Pakistan, Bhutan, Vietnam, Burma, Cambodia, Laos and Thailand. Now, with the river waters increasingly being diverted for other economic activities on the plateau and with China pursuing inter-river and inter-basin transfer projects, the transboundary implications of China's hold over Tibet are becoming worrisome.



cross India, ground water is receding and rivers are severely polluted. 80% of the waters of the Western rivers have already been lost to Pakistan through the Indus Water Treaty. The way things stand, we are disregarding the

Singh

value of water by not giving due importance to conservation, preservation and storage On the other hand, 75 years ago

China foresaw the water crisis likely to affect their country. This could well have been one of the reasons for them to annex Tibet because that is where all the water was. China sees itself as the controller of South Asia's mightiest rivers. It is estimated that 718 billion cubic meters (BCM) of surface water flows out of the Tibetan plateau.

Tibet

Tibet is South Asia's rainmaker, water supplier, and water reposito ry. It is from here that water flows in all directions and into many countries. The Tibetan Plateau has the largest perennial ice mass on the planet after the Arctic and Antarctica. Stretching 2,400 km from east to West and 1,450 km from north to South, this unique water bank is located on the world's largest and highest plateau, with the average elevation of 4000 meters above sea level, aptly called 'the Roof of the World.' There are more than 18.000 high-altitude glaciers and 1500 lakes in the Great Himalayas. which serve as massive storehouses of freshwater. The main rivers flowing out of the Tibetan plateau include the Yangtze, Yellow, Mekong, Salween, Irrawaddy, Arun,

Brahmaputra, Sutlej and the Indus.



The mighty Ganga's main tributaries flow in from the Tibet, including Karnali, Gandak and Kosi.

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Control over Water

China is the greatest dam builder in the world. Over the last 7-8 decades. China has constructed more than 87.000 dams. Mao Zedong approved and supported the idea of largescale damming of rivers. President Hu Jintao graduated as an engineer with a major in hydropower. In 1964, he served as Tibet's martial-law administrator. He thus fused two key elements, Water and Tibet Premier Wen Jiabao, a geological engineer, had also done geological work in the Tibetan Plateau. He too focused on Tibet's water. China considers water a sovereign resource rather than a shared resource China doesn't share data about water flow and hydropower operations with lower riparian states. Chinese maintains: Not one drop of China's water should be shared without China using it first or without making those downstream pay for it. China has dammed every major river on the Tibetan Plateau, Mekong, Salween, Yarlung Tsangpo, Yangtze, Yellow, Indus, Sutlej, Shweli and Karnali. There are indications that these dams will have reservoirs to export electric energy to mainland China. These projects are located very close to the geological fault line where the Indian Plate collides with the Eurasian Plate. An adverse natural calamity, causing major damage to Tibet's dams, could

#CHINESE MEGA DAM AND WATER CONTROL



entering Bangladesh.

The Mega Dam

tapped so far.

The Brahmaputra system con-

tains more than 30% of the coun-

try's water resources. It also has

about 40% of India's total hydropow-

er potential (31,012 MW), although

only 3% of the potential has been

On 25 December 2024, China's state

run Xinhua news agency reported

about the plan of the construction of

a hydropower project on the Yarlung

Tsangpo river, what will be the

world's biggest hydropower dam on

the eastern rim of the ecological

fragile Tibetan Plateau. After flow-

ing due east from its origin in

Kailash Mansarovar, the Yarlung-

towards India, cutting through a

very narrow and the deep gorge

between Namcha Barwa Peak (alti-

tude 25445 ft) and Gyala Pheri Peak

(altitude 23460 ft). Here, the river

forms the steepest and longest

human history. It is not clear if the

Tsangpo takes an abrupt south turn

lead to floods downstream. China has never officially communicated about the construction of these dams. A lack of transparency about dam building on the Tibetan rivers raises questions about the risk and impact on river systems that support millions.

The Indian Context

In the Indian context. there are two main river systems that draw their waters from Tibet, the Indus River System, and the Brahmaputra River System. The Indus River originates from Mount Kailash/ Lake Mapam enters India through Ladakh and flows into POK. The Sutlej River, which is the longest tributary of the Indus River System, also originates Mount Kailash/ Lake Mansarovar. The Sutlej enters India through the state of Himachal

Pradesh. The Yarlung Tsangpo (Brahmaputra) also originates from Mount Kailash. It flows eastward in Tibet at an average altitude of more than 4.000 meters for over 1650 km. Among the world's major streams, this is the highest river and one of the fastest flowing. It ranks as the fourth-largest river in the world by discharge. The Brahmaputra is, by ar, the most important river flowing from China into any other country in terms of the sheer volume. The average annual transboundarv flows into India of the Brahmaputra (165.4 BCM) are greater than the combined cross- border flows of Mekong and Salween. The Brahmaputra enters India at Korbo on the MacMahon Line as the Siang

River in Arunachal Pradesh. The Siang/ Dihang flows about 400 kilometers through a picturesque canyon before it meets with the Dibang river and the Lohit river

gorge are 5,000 meters and above, it is hard to imagine the amount of water that will get harnessed in the catchment of the dam. This super

BABY BLUES





YOU NOTICED THAT I WORE THIS OUTFIT TWICE? WHY, THE ONLY THING YOU WEAR TWICE IS A SOUR EXPRESSION. -L.M. MONTGOMERY



Celebrating International Volkswagen Bus Day

bserved annually on June 2, International Volkswagen Bus Day pays tribute to the enduring legacy of the VW Bus, a symbol of freedom, adventure, and cultural significance. Established in 2023 by Volkswagen of America in collaboration with the National Day Calendar, this day celebrates both the classic VW Bus and its modern electric successor, the ID. Buzz. From its launch in 1950, the VW Bus became more than just a vehicle, it was a canvas for self-expression and a vessel for communal experiences, from road trips to social movements.

Brahmaputra River System



in the plains of Assam at Kobo south of Sadiya town. It is from this point, which is the confluence of hree rivers, that the river assumes the name Brahmaputra. The river traverses another 650 km before

structed in Medog, on the Great Bend, 30 km from Indian border. The dam will generate 38 gigawatts of power, or more than twice the capacity of the Three Gorges Dam. Another report states it as a 60.000 MW project that will produce electricity three times the capacity of the world's largest hydroelectric facility, the Three Gorges Dam on the Yangtze River in central China. **Effect on India**

hydropower station will be con-

A gigantic hydropower project will undoubtedly have effect on the quantity of water flow in the Brahmaputra, especially if it can be controlled. It is also a fact that the Siang is not the only water supplier to the Assam plains, the Brahmaputra receives most of its water supply from massive rains in the catchment area of its tributaries mainly from Lohit and Subansari rivers. However, the average is calculated by including the monsoon flows. What happens in the lean season? Fluvial eco-systems depend on perennial water sources. If there is no water flow from Siang, are we looking at an ecological disaster?

canyon in the world. China plans to Similar to the situation painted above, but on a larger scale, untimedam the river near the Great Bend in Pemako area. The Great Bend ly release of Brahmaputra waters by China could unleash havoc in was chosen because of the steep descent of the Yarlung-Tsangpo, a Assam. The Brahmaputra's channel crucial factor for a hydro-electric is the widest water channel in India. dam. It will be the largest dam in extending more than 10 km at certain places. Geographically, dam project is merely a run of the Arunachal Pradesh rests on the river hydro-power project, or part of Brahmaputra towards the South. the South-North water diversion One can cross over from Assam to project. But when the walls of the Arunachal Pradesh only over existing bridges. What if sudden release water increases the Brahmaputra water channel to 15 20 km? Such an eventuality would

be disastrous for India. There is no doubt that the project is also dangerous from an environmental point of view. Deforestation will lead to rapid soil erosion and landslides. The Brahmaputra gathers extremely rich silt, which provides essential nutrients for the soil and farming downstream. High silt loads are essential to maintain the agriculture soil fertility and marine life downstream. It is the quality and not only the quantity that is in question. However, the concern is not only for damming of rivers, it is also for water diversions, part of the South-North Diversion Project. Will india be greatly deprived of water in case the waters of Tibet are diverted? The Himalayan region is earthquake prone. Other dams apart, the 38-gigawatt dam at the Great Bend will be huge. If an earthquake strikes and waters of the dam are released. it is obvious who will hear the brunt

Examples of Deliberate Flooding

At 0130 hours on 01 August 2000, a 50feet high wall of water tore from Pari Chu into Sutlej River from Khab on the border of Himachal Pradesh and Tibet. The mountain gorges of Kinnaur, Shimla and Mandi districts in Himachal Pradesh washed away everything that came in its path. By 0515 hours. the water reached Nathpa Jhakri Project. Within a short time, the level of river Sutlej rose by 15 meters. More than 100 persons lost their lives, 120 km of the strategic old India- Tibet Highway was washed away and 98 bridges of various sizes and shapes were destroyed.

Again in 2004, a lake began to form in the Pari Chu, threatening to cause floods in India's Sutlei valley. While China remained cooperative and shared upstream data with India this time, there was speculation that China deliberately created a 'liquid bomb,' an artificial lake, to be unleashed at will to potentially devastate downstream areas. This possibility got credence as China

Water, too much or too little, can rajeshsharma1049@gmail.com



rejected a request by India to send cientists and engineers to the site. The Brahmaputra, on 01 March

2012, ran completely dry at a place called Pasighat in Arunachal Pradesh. This was unprecedented. After a few hours, the Brahmaputra began filling up with high columns of onrushing water which inundat ed Pasighat town. This incidence raises the possibility of blocking of water at upper reaches first and its sudden release after that. In another case, on 11 June 2004, the Siang River rose by an unprecedented 100-120 feet and devastated four districts of Arunachal Pradesh and Assam. More than 26 persons lost their lives while three strategic bridges were swept away by the raging river waters. The official estimate of the loss was around Rs. 140 crore. The Indian Space Research Organisation (ISRO) had credible evidence that the Chinese caused these flash floods. Satellite images showed massive water bodies or lakes upstream in Sutlej and Siang River basins before the flash floods took place. These lakes disappeared soon after the disaster struck Indian erritory. In 2017, the Siang River turned muddy and blackened. With

up to 10 inches of sediment accumulated on some stretches of the riverbed, the water became unfit for numan consumption These sudden releases of water

were in all likelihood intentional. and not an act of God. India is a downstream country and thus vulnerable to an upper riparian tinkering with dam waters. Such releases of water in a war-like situation could have major military implications. Since China has effectively dammed every river that flows into India, it can use water as a weapon of war, by controlling releases as part of a military strategy. This water narrative sows the seed of distrust among neighbours

create crisis situations. If employed as part of a military strategy, it can have unimaginable repercussions.

ZITS

#BRAIN TEASERS

Train Your Mind

Best brain training apps that will challenge your working memory and improve your mental fitness!

he brain training apps are designed to improve your memory, thinking skills focus and even your intelligence, with the ultimate goal of improving the performance of important everyday tasks. People, young and old alike, have been looking for brain training games to improve their mental functioning, response time, and logic skills. New brain teaser apps show up every day in both the App Store and Google Play store with claims to improve memory and concentration, increase IQ or enhance other cognitive skills. Some brain exercise apps claim to boost IQ levels, which have positive effects on people with mental health ssues such as dementia or bipolar disorder. Here is a list of the best brain training apps that will challenge your working memory and improve your mental fitness.

ogniFit Brain Fitness is a

✓ brain training app designed

to improve your cognitive skills

and mental alertness. It offers a

structured training program that

measures overall mental fitness

and health. It delivers the pro-

gram in a game-like format to

make sure that users will enjoy

the training. Users can track

ntalUP Educational Games

CogniFit: Brain Training



umosity is the world's most popular brain training app used by over 100 million members worldwide. This popular brain games app offers 5-minutes workouts designed on the

(Android, iPhone, iPad)

progress and access insights

about overall brain health.

Competitive players can challenge

cepts of neuroplasticity and

neuroscience. This memory

training app could help sharpen

your memory and improve focus

It is based on accepted con-

friends, too.

and attention

Lumosity: Daily Brain Games

(Android, iPhone, iPad) 🔽 levate is a free brain training 🗋 app which lets you go through a personalized training program to improve your focus, cognitive skills and processing speed. This brain training app includes more than forty games intended to boost productivity, self-confidence, and learning ability. By focusing on math, articulation, writing, reading, and listening, the games teach you to enhance your ability to communi cate with others. You will be chal lenged to expand your vocabulary, increase your awareness of gram mar, and grow your reading compre hension. The personalized daily workouts will help you improve the skills that need the most help, like processing speed, self-confidence and productivity. You will be able to track your improvement, to challenge yourself to perform better.

Peak games are designed to challenge vour cognitive abilities. Their games are designed to push you hard with short, intense workouts designed around your life. You will be challenged with the skills that matter to you most, with games that test your focus, memory, problemsolving, mental agility and more.



By Rick Kirkman & Jerry Scott







and then the timed exercise begins. Players can set up the app to be biased towards helping certain skills and to take the user's age into account. A reports page provides a record of accomplishments and progress. A player avatar can also be upgraded with cosmetic items by spending the in-game currency



(Android, iPhone, iPad)

basis of neuroscience research This brain training app consists science-based games, designed to train exercise memory, speed, attention, flexibility, and problem-solving.

Elevate - Brain Training

Peak-Brain Training (Android, iPhone, iPad)

D eak is one of the most highly rated brain training app and has won 'App of the Year' awards by both Google Play and Apple App Store. The basic version of Peak is completely free of charge. This includes a workout of a few randomy assigned games a day, plus basic insights into your statistics.

Memorado Brain Training Games (Android, iPhone, iPad)

emorado brain training app is VI your workout gym for the brain. It features 24 brain training games with over 720 levels, to chall lenge vour working memory con centration and cognitive control Scientifically researched games help you grow and connect cognitive functions so that you learn how to boost your intelligence. Memorado has strong ties to the research community and was developed by brain training experts. You set goals with Memorado's unique and fun inter face that will set up your brain training methodology.

By Jerry Scott & Jim Borgman

