

Water woes: On the state of India's groundwater

India needs to **deal with** rising levels of nitrate in groundwater

An annual **assessment** by the Central Ground Water Board (CGWB) on the state of groundwater, and its quality, **has** some worrying **portents**. First, **the number** of districts with excessive nitrate in their groundwater **has** risen from 359 in 2017 to 440 in 2023. This **translates** to a little more than half of India's 779 districts having excessive nitrate, or more than 45 mg/L (milligram per litre). There are two major concerns with excess nitrate content: first, **methemoglobinemia**, or a reduced ability of red blood cells to carry oxygen. This sometimes causes 'Blue Baby Syndrome,' in **infants**. The bigger problem is environmental: once nitrates in groundwater rise to the surface and become part of lakes and ponds, **algal blooms throttle** the health of **aquatic ecosystems**. **What the CGWB found**, from analysing 15,239 groundwater samples across the country, **was** that close to 19.8% samples had nitrates — nitrogen compounds — above safe limits. However, this proportion has not shifted much since 2017, when 21.6% had excessive nitrate (13,028 samples).

Rajasthan, Karnataka and Tamil Nadu reported the largest **extent** of nitrate **contamination**, with 49%, 48% and 37% of the samples reporting numbers beyond the limit. Rajasthan, Madhya Pradesh and Gujarat have a **perennial** nitrate problem, primarily from geological factors, with relative levels fairly constant since 2017, the report says. However **regions** in central and southern India **are** reporting a rise, which is a reason for worry. Through the years, several studies have **established** the **correlation** between **elevated** nitrate levels and the practice of **intensive** agriculture. Other **significant** chemical **contaminants** affecting groundwater quality **were** fluoride and uranium. Fluoride concentrations exceeding the permissible limit were "a major concern" in Rajasthan, Haryana, Karnataka, Andhra Pradesh and Telangana. The report **drew attention to** the fact that **States** with **over-exploited** groundwater blocks — where **extraction** is more than **replenishment** — **were** more likely to have excessive chemical contaminants. Overall, the country's degree of groundwater extraction is 60.4%, or roughly the same as it has been since 2009. About 73% of the blocks analysed for groundwater levels are in the 'safe' zone, meaning that they are **replenished** enough to **compensate** for the water drawn out. While it is a good sign that India now has a **robust**, scientific system of assessment to monitor the health of groundwater blocks annually, efforts are lacking in getting States to act on these **findings**. There needs to be more **concerted** awareness programmes led by the highest levels of leadership to **contain** the crisis. **[Practice Exercise]**

- Red/blue coloring of words in the sentence indicates subject verb relationship; where 'red' denotes 'subject' and 'blue' denotes 'verb'.

Vocabulary

1. **Woes** (noun) – Troubles, problems, challenges, difficulties, grievances समस्याँ
2. **Deal with** (phrasal verb) – Address, handle, tackle, manage, confront निपटना
3. **Assessment** (noun) – Evaluation, analysis, appraisal, review, judgment मूल्यांकन
4. **Portent** (noun) – Warning, sign, omen, indication, forecast चेतावनी
5. **Translate** (verb) – Convert, express, result in, interpret, signify सूचित करना
6. **Methemoglobinemia** (noun) – A medical condition in which red blood cells lose the ability to carry oxygen मीथेमोग्लोबिनेमिया
7. **Infant** (noun) – Baby, newborn, toddler, child शिशु
8. **Algal bloom** (noun) – A rapid increase in algae in water, often harmful शैवाल का खिलना
9. **Throttle** (verb) – Choke, suffocate, restrict, suppress, obstruct गला घोटना
10. **Aquatic** (adjective) – Related to water, marine, hydrous, water-based जलीय
11. **Ecosystem** (noun) – Environment, habitat, biosphere, ecological community पारिस्थितिकी तंत्र
12. **Extent** (noun) – Range, scope, degree, level, magnitude सीमा
13. **Contamination** (noun) – Pollution, impurity, adulteration, defilement प्रदूषण
14. **Perennial** (adjective) – Continuous, enduring, perpetual, lasting, long-term चिरस्थायी
15. **Establish** (verb) – Prove, demonstrate, determine, confirm स्थापित करना
16. **Correlation** (noun) – Connection, relationship, association, interrelation संबंध
17. **Elevated** (adjective) – Raised, increased, heightened, higher, amplified बढ़ा हुआ
18. **Intensive** (adjective) – Thorough, concentrated, rigorous, exhaustive गहन
19. **Significant** (adjective) – Important, notable, substantial, considerable महत्वपूर्ण
20. **Contaminant** (noun) – Pollutant, impurity, toxin, adulterant प्रदूषक
21. **Draw attention to** (phrase) – Highlight, emphasize, focus on, bring into notice ध्यान आकर्षित करना
22. **Over-exploited** (adjective) – Overused, excessively drained, depleted, misused अति-शोषित

23. **Extraction** (noun) – Removal, withdrawal, retrieval, abstraction निकासी
24. **Replenishment** (noun) – Refilling, restoration, renewal, replacement पुनःपूर्ति
25. **Replenish** (verb) – Refill, restore, renew, refresh, replace फिर से भरना
26. **Compensate** (verb) – Offset, balance, make up for, redress, atone for क्षतिपूर्ति करना
27. **Robust** (adjective) – Strong, sturdy, resilient, effective, solid मजबूत
28. **Findings** (noun) – Results, conclusions, outcomes, discoveries निष्कर्ष
29. **Concentrated** (adjective) – Focused, condensed, intensified, unified केंद्रित
30. **Contain** (verb) – Control, restrain, manage, curb, limit नियंत्रण करना

Summary of the Editorial

1. **Rising Nitrate Contamination:** Groundwater with excessive nitrate levels has increased from 359 districts in 2017 to 440 in 2023, affecting over half of India's districts.
2. **Health Concerns:** Excessive nitrates can cause methemoglobinemia, also known as 'Blue Baby Syndrome,' reducing oxygen-carrying capacity in blood, particularly affecting infants.
3. **Environmental Impact:** Nitrate contamination leads to algal blooms in water bodies, severely harming aquatic ecosystems.
4. **Extent of Contamination:** Approximately 19.8% of groundwater samples analyzed in 2023 exceeded safe nitrate limits, similar to 21.6% in 2017.
5. **Regional Hotspots:** Rajasthan, Karnataka, and Tamil Nadu report the highest contamination levels, with 49%, 48%, and 37% of samples exceeding safe nitrate limits.
6. **Geological Contribution:** Rajasthan, Madhya Pradesh, and Gujarat face perennial nitrate issues due to geological factors, with contamination levels remaining stable since 2017.
7. **Emerging Risks:** Regions in central and southern India are witnessing a rise in nitrate contamination, raising concerns.
8. **Agricultural Practices:** Intensive farming is strongly linked to elevated nitrate levels in groundwater.
9. **Other Contaminants:** Fluoride and uranium also pose significant risks, particularly in Rajasthan, Haryana, Karnataka, Andhra Pradesh, and Telangana.
10. **Groundwater Over-Exploitation:** States with over-exploited groundwater resources are more prone to chemical contamination.
11. **Stable Extraction Levels:** National groundwater extraction stands at 60.4%, consistent since 2009.
12. **Safe Zones:** About 73% of groundwater blocks are categorized as 'safe,' with sufficient replenishment levels.
13. **Monitoring System:** India has developed a robust, scientific annual assessment system for groundwater monitoring.
14. **Inadequate Action:** Despite detailed findings, efforts to translate monitoring into state-level action are insufficient.
15. **Call for Awareness:** High-level leadership and extensive awareness campaigns are essential to address the growing groundwater crisis effectively

Practice Exercise: SSC Pattern Based

1. **Which Indian states reported the highest nitrate contamination in groundwater according to the CGWB report?** [Editorial Page]
 - A. Rajasthan, Madhya Pradesh, and Gujarat, primarily due to geological factors.
 - B. Rajasthan, Karnataka, and Tamil Nadu, due to increasing nitrate levels.
 - C. Andhra Pradesh, Telangana, and Haryana, due to agricultural practices.
 - D. Madhya Pradesh, Maharashtra, and Odisha, due to over-extraction of groundwater.
2. **Why is excessive nitrate in groundwater a significant concern, as per the passage?**
 - A. It leads to higher water extraction rates, causing water scarcity in rural areas.
 - B. It increases fluoride concentration in groundwater, leading to skeletal fluorosis.
 - C. It causes Blue Baby Syndrome in infants and disrupts aquatic ecosystems through algal blooms.
 - D. It leads to the depletion of natural geological barriers protecting groundwater.
3. **What is the report's recommendation regarding groundwater contamination, and what is the current challenge?**
 - A. It recommends strengthening awareness programs; the challenge is inadequate state-level action.
 - B. It suggests reducing water extraction rates; the challenge is the lack of groundwater data.
 - C. It proposes banning agricultural fertilizers; the challenge is dependency on intensive farming.
 - D. It calls for annual water conservation drives; the challenge is insufficient groundwater replenishment.
4. **What can be inferred about the link between groundwater contamination and agricultural practices?**
 - A. Agricultural practices have minimal impact on nitrate contamination, as geological factors are the primary cause.
 - B. Groundwater contamination by nitrate is more prevalent in states with minimal agricultural activity.
 - C. The report dismisses agricultural practices as a major factor in groundwater nitrate contamination.
 - D. Intensive agriculture significantly contributes to nitrate contamination, especially in central and southern India.
5. **What is the likely long-term consequence if states do not act on the findings of the CGWB report?**
 - A. Groundwater nitrate levels will stabilize due to natural replenishment processes.
 - B. Groundwater extraction rates will decrease, leading to improved water quality.
 - C. States with over-exploited groundwater blocks will face worsening contamination and environmental issues.

- D. Contamination by nitrate, fluoride, and uranium will only affect a small number of districts.
6. **Select the most appropriate option to fill in the blank.**
The streets are empty today as _____ a holiday.
A. was
B. its
C. it's
D. is
7. **Select the option that expresses the given sentence in active voice.**
Paddy is grown by the farmers of this village.
A. The farmers of this village grew paddy.
B. The farmers of this village have grown paddy.
C. The farmers of this village grow paddy.
D. The farmers of this village had grown paddy
8. **Select the most appropriate ANTONYM to replace the italicised word.**
There is a/an abundance of fertile soil and magnificent grazing land.
A. dearth
B. plenitude
C. adequacy
D. plethora
9. **Choose the correct spelling of the underlined word in the given sentence.**
The world is governed by several elemenyts.
A. elyments
B. elements
C. aliments
D. eliments
10. **Identify the sentence that contains no spelling errors.**
A. An Ethical Hacker identifies software vulanerabilities so that business owners may adress them before a baleful hacker uncovers them.
B. An Ethickal Hacker identifies software vulnerabilities so that bussiness owners may address them before a baleful hacker uncovers them.
C. An Ethical Hacker identifies software vulnerabilities so that business owners may address them before a baleful hacker uncovers them.
D. An Ethickal Hacker identifies software vulanerabilities so that business owners may adress them before a baleful hacker uncovers them.
11. **Choose the option which means the same as the underlined segment.**
His deep study of the case uncovered more problems.
A. opened a Pandora's box
B. opened the fire on
C. opened conversation
D. opened a season on

12. Select the option that can be used as a one-word substitute for the underlined group of words in the given sentence.

He was severe in his manner, due to his rigidly puritanical outlook.

- A. austere
 - B. faithful
 - C. precise
 - D. authentic
13. Identify the INCORRECTLY spelt word from the options given.
- A. Bangel
 - B. Angle
 - C. Angel
 - D. Bagel
14. Select the most appropriate ANTONYM of the word 'Unworthy' from the given sentence.
- Unethical behaviour like saying mean or nasty things is intolerable to a noble person
- A. Intolerable
 - B. Noble
 - C. Nasty
 - D. Unethical
15. Select the most appropriate option to fill in the blank.
- Although the jury system is fundamentally _____, no one has ever come up with a better one.
- A. sorted
 - B. appealing
 - C. flawless
 - D. flawed
16. Identify the idiom that best expresses the meaning of the underlined group of words.
- He is in a very bad situation after being caught with drugs at school.
- A. Last resort
 - B. In dire straits
 - C. Square an account
 - D. At cross purposes
17. Select the option that can be used as a one-word substitute for the given group of words.
- A floating container anchored to the sea bottom, so used for directing ships and warning them of possible danger
- A. Buoy
 - B. Deck
 - C. Cabin
 - D. Channel
18. Select the most appropriate meaning of the underlined idiom/phrase in the given sentence.
- Henry said he would help with the rent, but he left me in the lurch.
- A. To comfort someone

- B. To desert someone
C. To impersonate someone
D. To blame someone
19. **gives the most appropriate meaning of the underlined phrase in the following sentence.**
My neighbour has decided to join the air force.
A. Made up his mind
B. Made a clean sweep
C. Made a fuss
D. Made his own way
20. **Select the correct direct narration of the given sentence.**
Prem said that he had been listening to music for an hour.
A. Prem said, "I have been listening to music for an hour."
B. Prem said, "He has listening to music for an hour."
C. Prem said, "He has be listened to music for an hour."
D. Prem said, "I had listened to music for an hour."

Comprehension:

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

All drivers are affected by road rage, whether they are directly or indirectly (1)_____. Individual coping qualities (2)_____ the behaviour of stressful drivers. Instead of being enraged over circumstances beyond their control, drivers (3)_____ learn to be patient. On the road, we must be (4)_____ to control our own emotions. Road raged drivers are also more likely to (5)_____ more traffic offences.

21. **Select the most appropriate option to fill in blank number 1.**
A. involves
B. involving
C. involve
D. involved
22. **Select the most appropriate option to fill in blank number 2.**
A. influence
B. increase
C. apply
D. multiply
23. **Select the most appropriate option to fill in blank number 3.**
A. must
B. ought
C. can
D. to
24. **Select the most appropriate option to fill in blank number 4.**
A. able
B. consistent

- C. oblige
- D. brave

25. **Select the most appropriate option to fill in blank number 5.**

- A. incur
- B. proceed
- C. reflect
- D. drag

Answers

1. B 2. C 3. A 4. D 5. C 6. A 7. C 8. A 9. B 10.C 11.A
 12. A 13.A 14.B 15.B 16.B 17.A 18.B 19.A 20.A 21.D 22.A
 23. A 24.A 25.A

[Practice Exercise]

Explanation

- B) The CGWB report highlights that Rajasthan (49%), Karnataka (48%), and Tamil Nadu (37%) have the largest extent of nitrate contamination. This contamination is partly due to intensive agriculture practices and rising levels in central and southern India.
- C) Excessive nitrate causes methemoglobinemia, reducing the oxygen-carrying capacity of red blood cells, leading to conditions like Blue Baby Syndrome. Additionally, nitrates reaching surface water cause algal blooms, which harm aquatic ecosystems.
- A) While India has a scientific system to monitor groundwater, the report emphasizes that there is a lack of state-level action based on the findings. It calls for awareness programs led by top leadership to address the crisis effectively.
- D) The passage explicitly connects elevated nitrate levels in groundwater to intensive agriculture practices, particularly in regions like central and southern India, where nitrate contamination has been rising.
- C) The passage highlights that over-exploited groundwater blocks are more likely to have excessive chemical contaminants. Without action, this situation will worsen, impacting both human health and ecosystems.
- A) 'It's' का use होगा क्योंकि "it's" "it is" का संक्षिप्त रूप होता है। दिए गए sentence में, हम "it is" का use करना चाहते हैं जिससे वाक्य अर्थपूर्ण हो, अतः "it's" सही विकल्प है।
 - 'It's' should be used because "it's" is a contraction of "it is." In the given sentence, we want to use "it is" to make the sentence meaningful, hence "it's" is the correct option.
- C) The farmers of this village grow paddy
- A) 'Dearth' का use होगा क्योंकि "dearth" का अर्थ होता है 'कमी' या 'अभाव', जो "abundance" का विपरीत है। दिए गए वाक्य में, जिस शब्द का अर्थ 'प्रचुरता' या 'अधिक मात्रा' हो, उसका विपरीत 'dearth' होगा।
 - 'Dearth' should be used because "dearth" means 'lack' or 'shortage', which is opposite to "abundance". In the given sentence, the word that signifies 'ample amount' or 'plenty', its antonym would be 'dearth'.
- B) 'Elements' सही spelling है। वाक्य में mentioned शब्द 'elements' है जिसका अर्थ होता है तत्व। अन्य विकल्पों की spelling गलत है।
 'Elements' is the correct spelling. The word referenced in the sentence is 'elements' which means components or parts. The spellings in the other options are incorrect.
- C) An Ethical Hacker identifies software vulnerabilities so that business owners may address them before a baleful hacker uncovers them

11. A) 'opened a Pandora's box' का use होगा क्योंकि "opened a Pandora's box" का अर्थ होता है कि किसी चीज की गहरी जांच करने पर अधिक समस्याएं उजागर होती हैं। दिए गए sentence में, "deep study of the case" ने और अधिक समस्याओं को उजागर किया, इसलिए हम इस संदर्भ में 'opened a Pandora's box' विकल्प का चयन करेंगे।
- 'opened a Pandora's box' should be chosen because it means that delving deeply into something reveals more issues. In the given sentence, the "deep study of the case" brought to light more problems, hence we choose the option 'opened a Pandora's box' in this context.
12. A) **Austere** (adjective) – severe or strict in manner or attitude कठोर
13. A) The correct spelling of 'Bangel' is Bangle which means 'a rigid ornamental band worn round the arm or occasionally the ankle.' चूड़ी
14. B) **Unworthy** (adjective) – Shameful, degrading, dishonourable, disgraceful, disreputable, नालायक
- Noble (adjective) – Honourable, decent, gallant, polite, महान
15. B) 'Flawed' का use होगा क्योंकि इस sentence में, mention है कि jury system में कुछ दोष है, लेकिन फिर भी किसी ने इससे बेहतर कुछ सोचा नहीं है।
- 'Flawed' should be used because in the sentence, it's indicating that there is some imperfection in the jury system, yet no one has thought of a better one. The word 'flawed' accurately conveys this meaning.
16. B) **In dire straits** (phrase) – in a very bad situation बहुत बुरी स्थिति में
- **Last resort** (phrase) – a final course of action, used only when all else has failed. अंतिम उपाय
 - **Square an account** (phrase) – To settle one's debt; to pay what one owes to someone. खाता चुकता करना
 - **At cross purpose** (phrase) – Misunderstanding or having different aims from one another.
17. A) **Buoy** – A floating container anchored to the sea bottom, so used for directing ships and warning them of possible danger खतरनाक स्थानों के बारे में नावों को चेतावनी देने वाली तैरती हुई वस्तु जो समुद्र या नदी के तल पर बँधी होती है
- Deck (noun) – a floor of a ship, especially the upper, open level extending for the full length of the vessel. जहाज़ की छत
18. B) **left me in the lurch** (phrase) – To desert someone बिच मझधार में छोड़ देना
19. A) **Made up one's mind** (phrase) – make a decision; decide. मन बना लेना
- **Make a clean sweep** (phrase) – the winning of all of a group of similar or related competitions, events, or matches. जीत

- **Make a fuss** (phrase) – become angry and complain. हंगामा मचाना
- **Make one's own way** (phrase) – To advance or progress, especially through life, according to one's own efforts, inclinations, or designs अपना रास्ता खुद बनाना

20. A) Prem said, "I have been listening to music for an hour."

21. D) **Involved**

'Involved' का use होगा क्योंकि यह sentence में drivers के लिए एक passive form में है, जिसमें drivers को directly या indirectly affected बताया जा रहा है। दिए गए sentence में "drivers" को रोड रेज से प्रभावित किया जा रहा है, इसलिए हम "involved" शब्द का उपयोग करेंगे।

- 'Involved' should be used because it is in a passive form in the sentence where the drivers are being directly or indirectly affected. In the given sentence, "drivers" are being affected by road rage, so we use the word "involved".

22. A) **Influence**

'Influence' का use होगा क्योंकि यहां पर "Individual coping qualities" से "stressful drivers" के व्यवहार पर प्रभाव पड़ रहा है। दिए गए context में, "increase," "apply," और "multiply" का अर्थ समझ में नहीं आता है, इसलिए "influence" सबसे उपयुक्त विकल्प है।

- 'Influence' should be used because here "Individual coping qualities" are affecting the behaviour of "stressful drivers". In the given context, the meanings of "increase," "apply," and "multiply" don't make sense, hence "influence" is the most appropriate option.

23. A) **Must**

'Must' का use होगा क्योंकि "must" व्यक्ति को एक चीज को करने के लिए अनिवार्य रूप से प्रेरित करता है। दिए गए वाक्य में, drivers को सड़क पर सब्र सीखना चाहिए, इसलिए "must" यहाँ पर सबसे उपयुक्त है।

- 'Must' should be used because "must" indicates an obligation or a strong recommendation. In the given sentence, drivers are being emphasized to learn patience on the road, thus "must" is the most appropriate choice here.

24. A) **able**

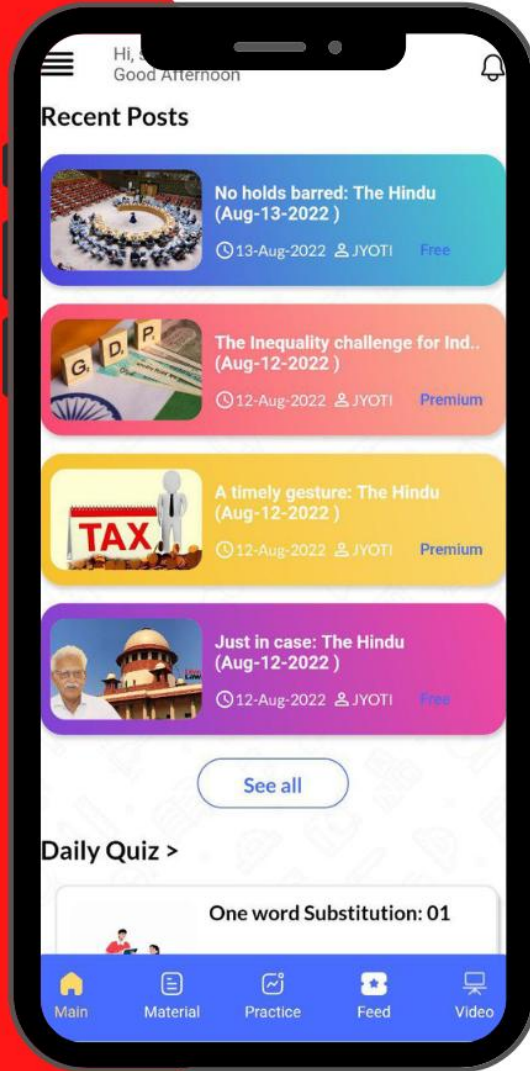
'Able' का use होगा क्योंकि "able" उस समय का प्रयोग किया जाता है जब किसी क्षमता या सामर्थ्य की बात की जाती है। दिए गए वाक्य में, अपनी भावनाओं को नियंत्रित करने की क्षमता का उल्लेख किया गया है, इसलिए हम इस रिक्त स्थान के लिए "able" चुनेंगे।

- 'Able' should be used because "able" is used when referring to capability or ability. In the given sentence, there's a mention of the capability to control emotions, so we choose "able" for this blank.

25. A) **Incur**

'incur' का use होगा क्योंकि "incur" का मतलब है किसी प्रकार का नुकसान या जिम्मेदारी उठाना। दिए गए sentence में, road raged drivers ज्यादा traffic offences को उठा सकते हैं

'Incur' should be used because "incur" means to become liable or subject to. In the given sentence, road raged drivers are more likely to face or get more traffic offences, so we use "incur" in this context.



Learn Vocabulary Through Reading Articles

English Madhyam