Detonators Explode on Railway Track | Madhya Pradesh | 24 Sep 2024

Why in News?

A **military special train** was briefly halted after **10 railway detonators exploded** on the tracks near **Sagphata,** between **Nepanagar and Khandwa stations** in **Madhya Pradesh.**

- The incident has prompted an investigation by the **Railway Protection Force (RPF)** to determine the **cause** and **potential motives** behind the placement of the detonators.

Key Points

- The detonators, described as **"harmless"** by railway officials, are typically used to alert train drivers of potential obstructions or dangers on the tracks.
    - These devices produce a **loud noise** when triggered by the pressure of a **train engine,** serving as a warning signal.
    - Their unexpected presence on the tracks during the passage of a military train has raised significant security concerns.
    - The RPF is currently investigating the incident from all angles, including the possibility of sabotage or mischief.
    - This incident has highlighted the need for **heightened security measures** along railway tracks, especially those used by military trains.
- **Detonators:**
    - A **detonator** is a device used to trigger an **explosive material,** initiating a controlled explosion.
    - Detonators are crucial components in **mining, demolition, military applications,** and other **industrial uses** where controlled explosions are required.
    - **There are different types of detonators, such as:**
        - **Electrical Detonators:** These are triggered by an electric current and are commonly used in mining and construction. They consist of a small charge that ignites the main explosive.
        - **Non-Electrical Detonators**: These use other means, such as a shock tube or a fuse, to initiate the explosion without requiring electricity.
        - **Electronic Detonators:** These advanced devices allow for **precise timing of the explosion** and are often programmable.

Railway Protection Force (RPF)

- The RPF is an armed force under the control of the **Union Ministry of Railways,** tasked with protecting railway property, passenger areas, and passengers.
- Originally part of the **Watch** and **Ward set-up** of Private **Railway Companies in 1881,** it was reorganised into a statutory body under the **RPF Act, 1957.**

Popular Explosives

- **Dynamite:** Dynamite is a type of explosive mainly made by mixing **nitroglycerin** with an absorbent material such as clay.
    - This **mixture stabilizes** the highly volatile **nitroglycerin,** making it safer to handle and

transport.

- **Ammonium Nitrate**: Ammonium nitrate is an inorganic compound consisting of **ammonium ions (NH4) and nitrate ions (NO3).**
    - It's commonly used as an agricultural fertilizer, but it can also be used as an explosive in certain conditions, particularly when combined with a fuel source.
- **TNT (trinitrotoluene): TNT** is an organic compound derived from **toluene**, an **aromatic hydrocarbon.**
    - TNT is a **yellow, odourless soli**d that is relatively stable and insensitive to shock and friction, making it a popular choice as an explosive used in military shells, in industrial uses, and in underwater blasting.
- **TNE (Trinitroethylener)**: TNE is an **organic nitrate compound. I**t has been used as an explosive but is less common compared to other explosives like TNT.
- **RDX (Royal Demolition explosive):** RDX is an organic compound, in appearance it is a white powder and is very explosive widely used in military and civilian applications due to its high explosive power and stability.
    - It is also known as cyclonite or hexogen.

Earthquake Tremors in Rajasthan | Rajasthan | 24 Sep 2024

Why in News?

Recently the residents of Barmer, Rajasthan, experienced **mild** earthquake **tremors.**

- The tremors led to a brief period of panic, with people vacating buildings and gathering in open spaces.

Key Points

- **Location**: Barmer, Rajasthan
- **Magnitude**: 3.5 on the Richter scale
- **Structural Damage:** No major structural damage has been reported. Some minor cracks in buildings were observed.
- **Emergency Response:** Local authorities quickly responded, ensuring that emergency protocols were followed. They have advised residents to stay alert and follow safety guidelines in case of aftershocks.
- **Seismic Waves:** Seismic waves are the vibrations from earthquakes that travel through the Earth and are recorded on instruments called seismographs.
    - Seismographs record a **zigzag trace** that shows the **varying amplitude** of ground oscillations beneath the instrument.
- **Richter Scale and Mercalli Scale:** The earthquake events are **scaled** either according to the **magnitude** or **intensity** of the shock.
    - The **magnitude scale** is known as the **Richter scale.** The magnitude relates to the energy released during the earthquake which is expressed in absolute numbers, **0-10.**
    - The **intensity scale or Mercalli scale** takes into account the visible damage caused by the event. The range of intensity scale is from **1-12.**

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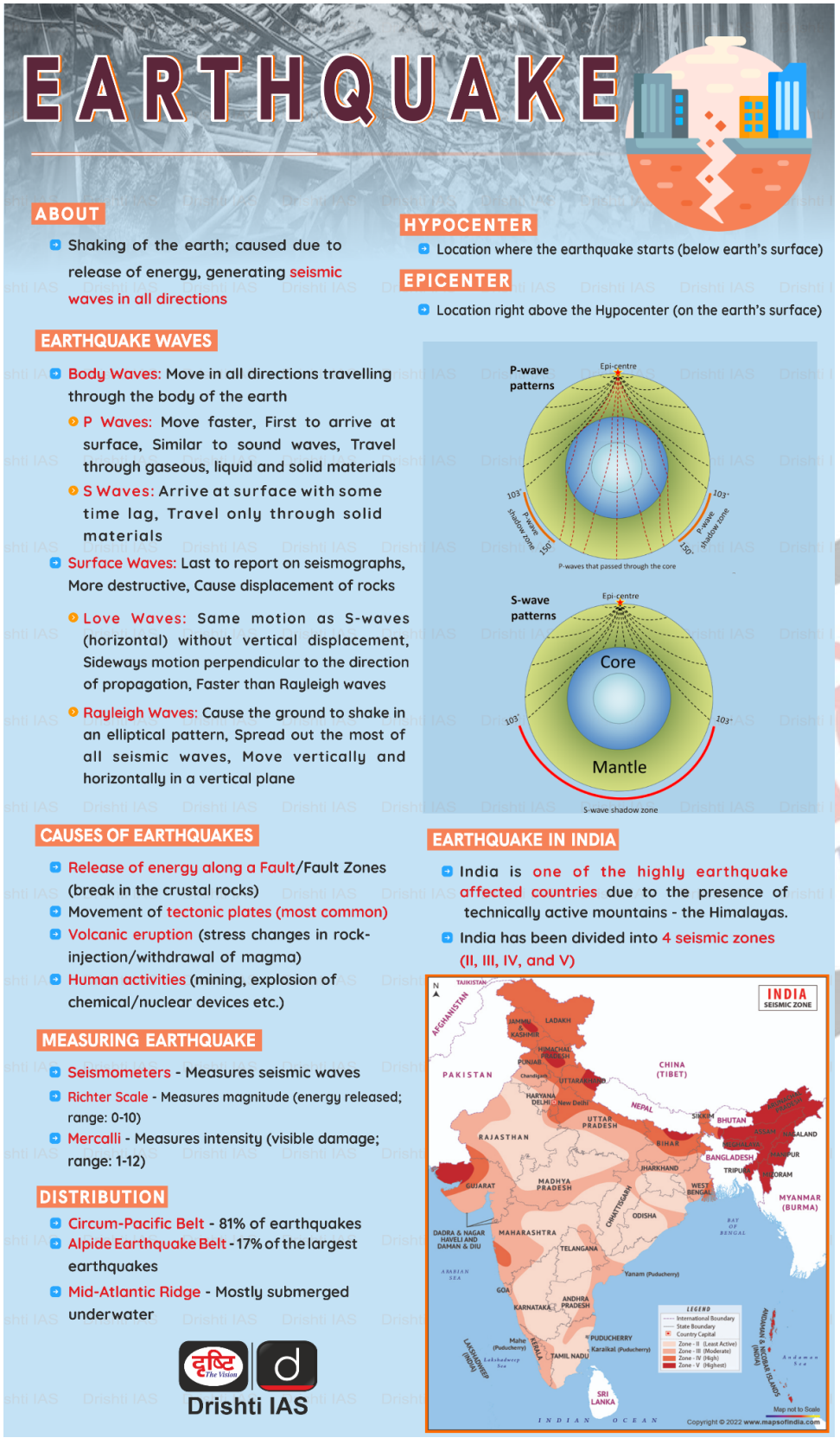

Seismic Zones in India

- There are **four seismic zones (II, III, IV, and V)** in India based on scientific inputs relating to seismicity, earthquakes that occurred in the past and tectonic setup of the region.
    - Previously, earthquake zones were divided into five zones with respect to the severity of the earthquakes but the Bureau of Indian Standards **(BIS)** grouped the country into **four**

seismic zones by unifying the first two zones.
- **BIS** is the **official agency** for publishing the seismic hazard maps and codes.
- **Seismic Zone II:**
  - Area with minor damage earthquakes corresponding to intensities **V to VI of MM scale (MM-Modified Mercalli Intensity scale).**
- **Seismic Zone III:**
  - Moderate damage corresponding to intensity **VII of MM scale.**
- **Seismic Zone IV:**
  - Major damage corresponding to intensity **VII and higher of MM scale.**
- **Seismic Zone V:**
  - The area around **major fault systems** is where seismic activity is concentrated, making it the most **earthquake-prone region.**
  - **Earthquake zone V** is the most vulnerable to **earthquakes**, where historically some of the country's most powerful shocks have occurred.
  - Earthquakes with magnitudes in excess of **7.0** have occured in these areas, and have had intensities higher than 9.

Sahara India Investors Relief Efforts: A Closer Look | Bihar | 24 Sep 2024

Why in News?

The **Sahara India Group** has been embroiled in a **financial crisis,** leaving millions of investors across India, including **33,000 from Bihar**, struggling to recover their money.

Key Points:

- Approximately **Rs. 1 lakh crore** from around **10 crore investors** nationwide is trapped in four cooperative societies of the **Sahara India Group.**
- Among them are **33,000 investors** from Bihar, with **Rs. 410 crore** stuck.
- The central government has initiated efforts to return the money, with some investors already receiving **Rs. 10,000.**
  - Now, the refund limit has been raised to **Rs. 50,000.**
- **Sahara India Group** has launched the **CRC Sahara Refund Portal,** through which investors can claim their pending amounts.
- The **district administration** has also provided details about the portal on its **official website**. Investors are encouraged to promptly **submit their claims** through the portal to expedite the refund process.

Rising Dengue Cases in Jammu & Kashmir | Jammu & Kashmir | 24 Sep 2024

Why in News?

The number of **dengue cases** has risen in **Jammu & Kashmir** and is currently experiencing a concerning increase in **dengue cases,** with officials confirming **934 cases** so far this year.

Key Points

- Dengue is a **mosquito-borne tropical disease** caused by the **dengue virus (Genus Flavivirus),** transmitted by several species of **female mosquito** within the **genus Aedes,** principally Aedes aegypti.
- The region has reported a steady rise in infections over the past week, with daily counts fluctuating between 19 to 83 cases.
- This upsurge in **dengue cases** comes as health authorities ramp up their efforts to manage the outbreak and educate the public on preventive measures.
- **Common symptoms of dengue include:**
    - Fever
    - Headache
    - Pain behind the eyes
    - Muscle, joint, or bone pain
    - Rash
    - Nausea and vomiting
- **Preventive Measures:**
    - Officials are urging people to take preventive steps to stop the spread of the disease because no dengue vaccine is available till now.
    - The Authority emphasized the importance of **eliminating mosquito breeding sites,** particularly **stagnant water,** and advised individuals to take personal precautions to avoid mosquito bites.
    - Using **mosquito repellents** and wearing long-sleeved clothing.
    - Using **mosquito nets** during daytime sleep and treating them with **insect repellents.**
    - Staying vigilant and monitoring for symptoms