

UPSCprep Free Daily Answer Writing Initiative

Subject: GS 3

Syllabus: Environment and Disaster Management

Questions

Q1. There will be a moment when the NDRF and SDRF can't respond to a crisis promptly, no matter how well-prepared they are. In this context examine the relevance of community-level disaster volunteers as first responders for disaster management in India.

(150 words)

10

Q2. Arsenic pollution is becoming a severe environmental issue in India. Enumerating its various sources, discuss the measures to tackle Arsenic pollution. (150 words)

10

Model Structures

Q1. There will be a moment when the NDRF and SDRF can't respond to a crisis promptly, no matter how well-prepared they are. In this context examine the relevance of community-level disaster volunteers as first responders for disaster management in India.

(10 Marks)

Introduction:

- Disaster Management Act, 2005 has made the statutory provisions for constitution of National Disaster Response Force (NDRF) for the purpose of specialised response to natural and man-made disasters.
- Two national calamities in quick succession in the form of Orissa Super Cyclone (1999) and Gujarat Earthquake (2001) brought about the realisation of the need of having a specialist response mechanism at National Level to effectively respond to disasters. This realization led to the enactment of the Disaster Management Act on 26 Dec 2005.

Main Body:

Role and mandate of NDRF:

- Specialised response during disasters.
- Proactive deployment during impending disaster situations.
- Acquire and continually upgrade its own training and skills.
- Liaison, Reconnaissance, Rehearsals and Mock Drills.
- Impart basic and operational level training to State Response Forces (Police, Civil Defense and Home Guards).
- Community Capacity Building Programme.
- Organise Public Awareness Campaigns.

Limitations of NDRF and SDRF:

- **Remote areas:** It is difficult for these forces to reach remote and difficult areas like higher himalayan states like J & k and Ladakh on time.
- **Connectivity infrastructure:** During disasters like cyclones, affected areas got cut off from the mainstream connectivity due to absence of all-weather road connectivity, felling of trees and blockages of road thus delaying the NDRF response.
- **Human resources:** the effectiveness of the NDRF has been hampered due to lack of trained manpower and an absence of systematic training facilities and equipment.
- **Financial resources:** It is deprived of necessary funds and infrastructure from the Centre. The proposal to add two more battalions from SSB has been pending for more than two years.
- **Lacunas of state disaster response forces:** Most of the states are largely lethargic in creating a disaster response mechanism as mandated by the Disaster Management Act of December 2005.
 - Jharkhand and some northeastern states do not have State Disaster Response Forces (SDRFs) while others like Kerala have shared manpower.
 - “In some states the SDRFs exist only on paper and in others they are operating on borrowed manpower from state armed forces, police and civil defence.

Thus, “Community based disaster preparedness is the key to effective disaster management.” This is because during any disaster, communities are always the worst affected and the first to respond.

Relevance of community-level disaster volunteers

- **Local concerns:** It ensures local ownership, addresses local needs and promotes a culture of mutual help to prevent and minimise damage.
 - Local geo-climatic and socio-cultural characteristics get the attention of the people in development and disaster management.
- **Vulnerable groups:** reduce vulnerabilities and increase capacities of vulnerable groups and communities to cope with, prevent or minimise loss and damage to life, property, and the environment,
- **Self-ownership:** Feelings of coordination and self-belonging to the society are developed.
- **Exchange of local knowledge with experts:** There is exchange of knowledge, information, skills and techniques between the community and the experts involved from outside.
- **Capacity building:** It will lead to capacity building of the community on issues of disaster-safe developmental activities
- **Bottom up approach:** bottom-up, participatory approach can make community members more receptive to new knowledge and information presented to them.
- **Speedy evacuation And response:** Disaster preparedness at the community level is conducive for speedy dissemination of alerts and mobilisation of the people necessary for effective implementation of evacuation operations

Case Study:

- Two coastal villages in Odisha, **Venktraipur in Ganjam district and Noliasahi in Jagatsinghpur district** which earned the recognition of being ‘Tsunami Ready’ from the UNESCO Intergovernmental Oceanographic Commission, making India the first country in the Indian Ocean Region to establish such high levels of disaster preparedness at the community level.

- It presents a great example of community based disaster management with its laudable evacuation programme earning it this tag.

Conclusion:

- Long term plans are necessary with an eye on potential dangers such as climate change which threatens to increase the intensity and frequency of natural disasters in the future.
 - The objective is to inculcate disaster risk resilience within the communities so that they are not only prepared but can also resist, absorb, accommodate and recover.
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Q2. Arsenic pollution is becoming a severe environmental issue in India. Enumerating its various sources, discuss the measures to tackle Arsenic pollution. (10 Marks)

Introduction:

- The Central Ground Water Board highlighted that 21 states have pockets with arsenic levels higher than the Bureau of Indian Standards' (BIS) stipulated permissible limit of 0.01 milligram per litre (mg/l). (Fact based introduction)

Main Body:

Arsenic pollution a severe environmental issue in India:

- Drinking arsenic water results in **cancer of skin, bladder, kidney and lung**, diseases of the blood vessels and reproductive disorders.
- Intense groundwater irrigation leads to uptake of Arsenic by the crops causing **phyto-accumulation** of arsenic in them.
 - Ex- paddy farms are exposed to Arsenic pollution due to groundwater irrigation.
- The entry of arsenic into the food chain, in addition to drinking water increases possibilities of **biomagnification**.
- Rice husk used as fodder for livestock exposes them to impacts of arsenic contamination. This leads to potential risk for humans when they consume cattle-based food products.

Sources of Arsenic:

- **Natural-**
 - Weathering of rocks and minerals followed by subsequent leaching and runoff.
 - Widely distributed throughout the air, water and land and is highly toxic in its inorganic form.
- **Anthropogenic-**
 - **Intense exploitation of groundwater.**
 - Application of fertilisers.
 - Burning of coal and leaching of metals from coal-ash tailings.
 - **Industrial effluent-** used as an alloying agent and in the processing of glass, pigments, textiles, paper etc.

Measures to tackle Arsenic pollution:

- **Treatment technologies** based on lime softening and iron co-precipitation.
- Use of **Innovative technologies-**
 - Permeable reactive barriers.
 - Phytoremediation.
 - Biological treatment and electro kinetic treatment.
- **Rainwater harvesting and recharging of groundwater table** to avoid fall in groundwater level and check leaching of metals into groundwater.
- **Substitution of high-arsenic sources**, such as groundwater, with low-arsenic safe sources such as rainwater and treated surface water.

Steps taken:

- The **2030 Agenda for Sustainable Development**, calls for access to drinking water which is free of faecal contamination and priority chemical contaminants, including arsenic.
- **Jal Jeevan Mission** is envisioned to provide safe and adequate drinking water through individual household tap connections by 2024 to all households in rural India.

Steps needed:

- The extent and severity of arsenic contamination should be recognised and necessary steps should be taken to combat it.
- The government should **develop a national plan of action** and ensure that mitigation measures are implemented in a coordinated manner.
- Need to **work with academic and research institutions** to improve the understanding of the causes, extent and impact of arsenic contamination.

Conclusion:

- All mitigation measures need a bottom up approach along with public participation to make it a success.

Additional Information:

States along the Ganga-Brahmaputra-Meghna (GBM) river basin such as UP, Bihar, Jharkhand, West Bengal and Assam are the worst affected. Further, despite arsenic contaminating the food chain, mitigation measures are targeted towards groundwater or surface water. Also, arsenic contamination testing has been restricted to drinking water sources excluding water sources used for irrigation.

Affected areas



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