→ Shallow Tubewells can be used as a precautionary measure

Environment KOL CLASS-7 26/06/20 ①

Storm Water Drains

These were initially rivers are tributories of major rivers but presently they are used for discharge of sewage. Storm water drains are one of the reasons behind contamination of major rivers of India. According to MoEF guidelines these drains should not be covered to disallow human settlement and tree should be planted on both side to reduce the contamination level. The contamination of river ganga is due to three main reasons.

1. Leather Industries (KANPUR)
2. Buring of Dead bodies (VARANSI)
3. Open defecation near this river.

Ganga Action Plan I was launched in 1986, did not take concrete measures for storm water drains. This action plan covered 25 cities. The GAP II launched in the year 2001, was responsible for taking some stem for storm water which included establishment of monitoring centres enhancing awareness among peoples and establishment of sewage treatment plant.

In the 2014, with an allocation of more than 20,000 Cr Rupees, Namami Gange project was started with two main purpose.

1. Clearing storm water Drain by the process of Bioremediation
2. Establishment of Ganga EcoTask force.

6000 Cr was allocated for developing a waterway on River Ganga between Varanasi and Haldia (W.B). This would be attained by dredging of Ganga 3m vertically and 45 m horizontally.
This would be also fruitful for flood managment as floods occur due to silting of rivers. At a strech of 100 km each mini hydel project would also be established. The adverse impact on this can be on the conservation to protect the Gangetic Dolphins.

Uranium Contamination in India

According to WHO Uranium in Underground water should not exceed 30 µg/litre but in states like Punjab, Rajasthan, Telangana and Andhra Pradesh Uranium contamination has been witnessed in Punjab the

(3)

worst affected include Faridkot, Hoshiarpur and Bhatinda district. The adverse impact of uranium contamination is not only genetic disordered but also kidney problem. There are many possible answers of for uranium contamination in Punjab.

⇒ According World Bank report, Cluster Bombs are used by US in Afganistan war may be responsible for it as it consist of depleted Uranium.

⇒ According to environment-list of this area it may be due to excessive use of fertiliser or fly ash generated from power plants. This area of punjab is near the shiwaliks where in the rocks uranium deposit are present.

1/3rd of Rajasthan is affected due to Uranium contamination as post green revolution, excessive withdrawal of underground water took place which was responsible for oxidation of uranium present in Underground waters resulting in its enrichment.

In Andhra Pradesh and Telangana Uranium contamination is mainly due to crystalline rock like granite.

SHALE GAS EXTRACTION

Shale is a sedimentry rock which has natural gas(CH_4) deposite in it. Extraction of shale gas is conducted by a mechanism called Hydraulic fracturing and (fracking) where fresh water would be mixed with sand and some chemical and this mixture would be put at a very high speed for blasting the rock after which extraction would be conducted. Chemicals used include HCl used to make dent in the rock and NH_4Cl which is used to make the process germ free. for increase the viscosity of mixture Gum of CLUSTER BEAN would be used.

Adverse impact of shale gas extraction used

1. Contamination of water bodies near by due to Debris
2. emitted and chemical use.
3. CH_4 would also be released, which is a greenHouse Gas.
4. mild tremor would also occur in this area
5. Water scarcity would also be witnessed in this area.

Shale gas reserves in India are present in the

Krishna - Godavari Basin.

Maharadi Basin

Cambay Region of Gujarat

Bay of Bengal

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But the biggest reserve is present in the Indo Gangetic plane which is densely populated.

→ The first shale gas extraction plant has been established in Jambusar (Gujarat).

Water Pollution

Water bodies are said to be contaminated when the dissolved oxygen level reduced & and is less than 8 mg/litre ↓ the Biochemical oxygen demand (BOD) of these water bodies enhanced.

BOD

It is the amount of oxygen required for the decomposition of Biodegradable waste. But a better benchmark would be COD (Chemical oxygen demand) which is the amount oxygen required for decomposition of both Biodegradable and non-biodegradable waste.

Water pollution is responsible for numbes of diseases that include Minamata diseases which occur due to Mercury contamination

Itai-Itai Diseases which occures due to Cadmium Contamination.

Fluorsis - due to fluoride contamination (MP + AP, Rajasthan)

Blue-Baby Syndrome - due to Nitrate contamination

Air Pollution

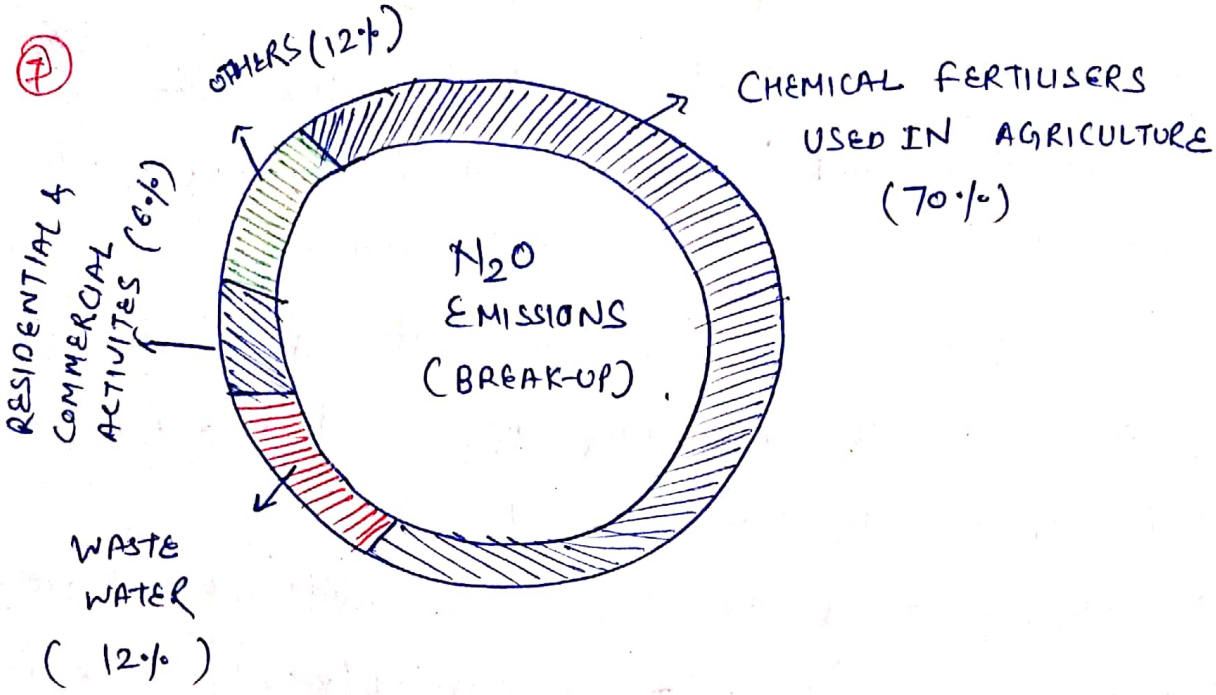
National Air Quality Index Parameter. ($\mu g/m^3$)
(1. PM_{10}, 2. $PM_{2.5}$, 3. NO_2, 4. O_3, 5. CO, 6. SO_2,
7. NH_3, 8. Pb)

National Air Quality Index

for PM_{10}			for $PM_{2.5}$
0-50	Good	Dark Green	0-30
51-100	Satisfactory	Green	31-60
101-200	Moderately Polluted	Yellow	61-90
201-300	Polluted	Orange	90-120
301-400	Highly Polluted	Red	121-250
401+	Severe	Maroon	250+

In-2018 →
1. KANPUR
2. faridabad
3. Varanasi

(7)



Air pollutants are in the form of aerosoles or particulate matter (PM) and is measured in terms of aerosol optical depth (AOD) for which the unit microgram/meter^3 ($\mu g/m^3$) is used. The National Air quality index includes eight indicators.

Delhi is one of the worst in terms of pollution when compare to other metros in India.

Delhi is a land locked city whereas the other three metro are coastal cities and due to blowing of land and sea breezes air pollution level in these cities are reduced. In the surrounding areas of Delhi in state like Punjab, Haryana, U.P and Rajasthan stubble burning takes places on a large scale which is responsible for enhancing the air pollution level. It can be attributed to the

Pusa 44 variety of Paddy which was the gift of green revolution and is a long lived variety which give less time for wheat cultivation.

Stubble burning is responsible for emission of number of gases which includes NOx, N_2O, and also Black and Brown Carbon gets emitted.

The Nitrate particles are the main constituent of $PM_{2.5}$.

Every year in India 240 million kg/yr of NOx is emitted and 7 million kg of N_2O is emitted.

The three main gases emitted from the agriculture sector of India include NOx, N_2O and CH_4.

If the trend continue like this India would become biggest emitter of NOx.

Presently India is the biggest emitter of NH_3 and SO_2.

India has one of the largest number of cattle in the world and Urease which is a enzyme secreted by microorganism present in the cattle waste converts Urea in the Urinary waste into Ammonia NH_3.

India has a number of Power Plant which lacks desulphurisation technology and as such 15 % of SO_2 Hotspots are located in India.

Initiatives

1. NGT banned stubble burning in these state UP Rajasthan, Punjab in 2015.
2. The Supreme Court of India in 2017, banned the use of Lithium, Arsenic, Mercury, Antimony and Lead in fire crackers. As the festival of Diwali coinsides with the period of stubble burning.
3. The Agricultural Scientist of India developed two new variety of Paddy PUSA 121, PUSA 126, to curb stubble burning as these are short lived varieties of paddy.
4. The government of India also purchase 34,000 devices to be supplied to farmer of these state to curb stubble burning which included HAPPY SEEDERS, HAY RAKES and STRAW CHOPPER.
5. IIT + KIIT (Bhubaneshwar) have developed BIO-BRICK where stubble can be utilised.
6. Similary Dr. M.S. Swaminathan has proposed Rice Bio-Parks for these state where stubble can be utilised by farmer for commercial propose.
7. The Dutch company along with indian startup have taken initiative called Clean Air India Initiative

where the stubble produced would be used for making Cardboard boxes and building block by this Company.

In the surrounding area of Delhi, particulary the NCR, which is a highly industridised zone, ~~furshi~~ furnance oil was used at large scale. by industries. furnance oil is one of the last grade product which has a sulpher contain of 15,000 – 20,000 ppm when compare to Diesel (50 ppm). when furnance oil is burnt, sulphure is emitted. Sulphure is a gas but when it comes in contact with moisture in atmosphere it transform into Particulate matter.

The Brick kilns in the surrounding area is also enhancing the air pollution level as in these kilns for energy purpose 70% coal, 24% SAW Dust and 6% wood is used. As such burning of both fossile fuel and organic matter take place.