## NITRATE CONTAMINATION IN DRINKING WATER AROUND THE VILLAGES OF KALI EAST RIVER, MEERUT U.P., INDIA

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**Abstract:** Nitrate contaminations in drinking water were measured around the villages of Kali east river of Meerut district. The results indicate a large variation of nitrate from 2.5 mg/l-80 mg/l. In this study 32 sample were collected for the study and found about 21.85% high nitrate contents (>50 mg/l), which is more than the permissible limit in drinking water. The study indicates that ground water of villages near Kali east river is more polluted. The possible source for the high nitrate level in ground water were identified as excessive utilization of nitrogenous fertilizers for agricultural purposes and effluent from different industries, sewerage of city and villages are dumped in to kali east river without any treatment which pollute the river and ground water resources.

Key words: Nitrate pollution, Ground water, Kali east river, Meerut, India.

## REFERENCES

- Arbuckle, T.E.; Hewart, D. and Sherman, G.J. (1986). Recongenital malformation and maternal drinking water supply in rural South Australia: a case study (letter) *Am. J. Epidemiology* 124-344.
- Arbuckle, T.E.; Sherman, G.J.; Corey, P.N.; Walter, D. and Lo, B. (1988). Water nitrates and CNS birth defects: a population based case control study. Arch. Environ. Health, 43; 162-167.
- Bacci, E.; Franchi, A.; Bensi, L. and Haggic, C. (1994). Evaluation of fate and exposure models-Calibratroy a sample model for ranking the contamination potential. *Environ. Sci. Pollut. Res.* 2, 94-97.
- Bhatnagar, V.K. and Singh, P.N. (2002). Nutrients and water management for sustainable sugarcane production. *Indian Farming Special Issue on Sugarcane Production*: 15-17.
- Bouwman, A.F.; Van Dreh, G. and Vander Hoek, K.W. (2005). Global and regional surface nitrogen balances in intensive agricultural systems for the period 1970-2030 *Pedosphere*. 15, 137-1554.
- Burt, T.P.; Healthwaite, A.L. and Truggill, S.T. (1993). Nitrate process pattern and management. *John Willey, New York* p, 444.
- Carter, L.W. (1997). Nitrates in ground water Lewis, Boca Ratan, Florida, USA, 263 pp.
- **Dudley, C.J.** (1990). Nitrate to the threat to food and water. *Green Print*, London, 71-76
- Dorsch, M.M.; Scragg, R.K.; Mc Michael, A.J.; Baghurst, P.A. and Dyer, K.F. (1984). Congenital malformations and maternal drinking

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water supply in rural south Australia: a case control study Am. J. Epidimiology. 119; 473-486.

- Fan, A.M.; Willhite, C.C and Book, S.A. (1987) Evaluation of the nitrate in drinking water standard with reference to infant methemoglobine and potential reproductive toxicity *Regul. Toxicol. Pharmaco.*, **7**: 135-148.
- Field, S. (2004). Global nitrogen: Cycling out of control. Environ. Health Perspect., 112:A 537-A 563.
- Gelperin, A.; Moses, V.K. and Bridger, C. (1975). Relationship of high nitrate community water supply to infant and fetal mortality *Med. J.* 147: 155-157
- Hammer, M.J. (1996). Water and waste water technology. John Willey, New York p, 550
- Korom, S.F. (1992). Natural identification in the saturated zone. Water Resour. 28, 1657-1668.
- Lindsay, W.L. (1979). Chemical equilibrium in soils. Jhon Willey, New York. p. 149.
- Nolan, B.T.; Ruddy, B.C.; Hitt, K.J. and Helsel, D.R. (1998). A National book at nitrate contamination of ground water. USGS- NAWQA. Issue of water conditioning and Purification. 39(12) 76-79.
- Rivers, C.N.; Barrett, M.H.; Hiscock, K.M.; Dennis P.F.; Feast, N.A. and Lerner, D.N. (1996). Use of nitrogen 150 topes to identify nitrogen contamination of the sherwood Sandstone Aquifer Beneath the City of Nottingham, United Kingdom. *Hydrogeology J.* **4**: 90-102.
- Saxena, V.K.; Mandal, N.C. and Singh, V.S. (2004). Identification of seawater ingress using strontium

and beron in Krishna delta, India. Curr. Sci. 84(4): 586-590.

- Smith, G.D.; Wetselaar, R.; Fox, J.J.; Varied Graff, R.H.M.; Moelijohardjy, D.; Sarwano, J.; Wiranto Asjari, S.R. and Tjojudo, S. Basuki (1999). The origin and distribution of nitrate in ground water from villages wells in kotaged yogyakarta, Indonesia *Hydrogelogy* J. 7: 1-14.
- Spadling, R.F. and Exner, M.E. (1993). Occurrence of nitrate in groundwater: A review J. Environ Qual., 22: 392-402.
- Super, M.; Heese, H.; Mackenzie, D. and Dempster, W (1981). An epidemiological study of well water nitrates in a group of south west African/ Nambian infants. *Water Res.*, 15: 1265-1270.
- Taobacova, S. and Balobaeva, L (1993). Environmental pollutants in relation to complication of pregnancy *Environ. Health Perspect*, 101 (suppl) (2): 27-31.
- Tabacova S.; Baird, D.D. and Balabaeva L. (a1998). Exposure to oxidized nitrogen: lipid peroxodation and neonatal health risk. Arch. Environ. Health, 50: 214-221.

- Vrba, J.; and Romijn, E. (1986). Impact of agriculture activities on ground water. *International contribution to Hydrogeology*, **5**: AIH.
- **WHO**, (1993). Guidelines for drinking water quality 2<sup>nd</sup> Edition, *World Health Organistion* 267pp.
- WHO, (2004a). Nitrates and nitrites in drinking water WHO/SDE/WSH/04.08/56. Rolling revision of the WHO guidelines for drinking water quality. Draft for review and comments, Geneva: World Health Organization.
- WHO, (2004b). Guidelines for drinking water quality 3<sup>rd</sup> Ed. Vol 1, Recommendations, Geneva. World Health Organization.
- Zaporozec, A. (ed) (2004). Groundwater contamination inventory: A methodological Guide International Hydrological Programme (IHP) VI *Groundwater Series no.* 2 UNESCO, 16 pp.