

## REFERENCES

1. 'Methodology', A Report of the Ground Water Resource Estimation Committee (GEC-2015), Central Ground Water Board, Ministry of Water Resources, Government of India
2. Abdul Saleem, Mallikarjun N. Dandigi and Vijay Kumar, "Correlation-regression model for physicochemical quality of groundwater in the South Ind. city of Gulbarga", *African J. of Environ. Science and Technology*, 6(9), 353-364, 2012.
3. Abhishek Kumar Chaurasia, H. K. Pandey, S. K. Tiwari, Ram Prakash, Prashant Pandey and Arjun Ram (2018). "Groundwater Quality assessment using Water Quality Index (WQI) in parts of Varanasi District, Uttar Pradesh, India". *JOURNAL GEOLOGICAL SOCIETY OF INDIA Vol.92*, July 2018, pp.76-82.
4. Adimalla N and Li P (2018), "Occurrence, health risks, and geochemical mechanisms of fluoride and Nitrate in groundwater of the rock-dominant semi-arid region, Telangana State, India", published in *Human and Ecological Risk Assessment: An International Journal*.
5. Adimalla N and Venkatayogi S. 2018. Geochemical characterization and evaluation of groundwater suitability for domestic and agricultural utility in semi-arid region of Basara, Telangana State, South India. *Appl. Water Sci.* 8:44. <https://doi.org/10.1007/s13201-018-0682-1>
6. Agrawal V and Jagetia M, Hydrogeo-chemical assessment of ground water quality in Udaipur City, Rajasthan, India, 151-154, 1997.
7. Ahamed, a. J. Loganathan, k. Ananthkrishnan, s. Ahmed and j. K. C.– ashraf. "Evaluation of graphical and multivariate statistical methods for classification and evaluation of groundwater in Alathur block, Perambalur district, India". *International water, air & soil conservation society*, Kuala lumpur, Malaysia.
8. Aller Linda, L. J. (1985) DRASTIC: A standardized system to evaluate groundwater pollution potential using hydrological settings. *National Water Well Association Worthington. Ohio.* pp 38-57.
9. Aminreza Neshat, Biswajeet Pradhan and Mohsen Dadras (2014). "Groundwater vulnerability assessment using an improved DRASTIC method in GIS". *Resources, Conservation and Recycling* 86 (2014) 74–86.
10. Amjad Aliewi and Issam A. Al-Khatib (2015). "Hazard and risk assessment of pollution on the groundwater resources and residents' health of Salfit District, Palestine". *Journal of Hydrology: Regional Studies* 4 (2015) 472–486. <http://dx.doi.org/10.1016/j.ejrh.2015.07.006>.

11. Anjali Singh, S. K. (2015) A modified-DRASTIC model (DRASTICA) for assessment of groundwater vulnerability to pollution in an urbanized environment in Lucknow, India. *Environmental Earth Sciences* , 5475- 5490.
12. APHA, AWWA, “WEF Standard Methods for the Examination of Water and Wastewater”, 20th edition 1998.
13. Arina Khan, Haris Hasan Khan, Rashid Umar and Muneeb Hasan Khan (2014). “An integrated approach for aquifer vulnerability mapping using GIS and rough sets: study from an alluvial aquifer in North India”. *Hydrogeology Journal* (2014) 22: 1561–1572 DOI 10.1007/s10040-014-1147-8.
14. Atiqur Rahman (2008). “A GIS based DRASTIC model for assessing groundwater vulnerability in shallow aquifer in Aligarh, India”. *Applied Geography* 28 (2008) 32–53.
15. Bobba, A. G.; Singh, V. P.; Bengtsson, L. Sustainable development of water resources in India. *Environ. Manage.* 1997, 21, 367– 393.
16. Chatterjee, A.; Das, D.; Chakraborti, D. A study of ground water contamination by arsenic in the residential area of Behala, Calcutta due to industrial pollution. *Environ. Pollut.* 1993, 80, 57–65.
17. Chaudhary, C.; Jacks, G.; Gustafsson, J. E. An analysis of groundwater vulnerability and water policy reform in India. *Environ. Manage. Health* 2002, 13, 175–193.
18. Chetan P. S. Ahada and Surindra Suthar (2017). “Assessment of Human Health Risk Associated with High Groundwater Fluoride Intake in Southern Districts of Punjab, India”. *Exposure and Health* <https://doi.org/10.1007/s12403-017-0268-4>.
19. Chetan P. S. Ahada and Surindra Suthar (2018), “Groundwater Nitrate contamination and associated human health risk assessment in southern districts of Punjab, India” Published in *Environmental Science and Pollution Research* by Springer. <https://link.springer.com/article/10.1007/s11356-018-2581-2>
20. Datta P S and Tyagi S K, Major ion chemistry of groundwater in Delhi area: chemical weathering process and groundwater flow regime, *J Geol Soc India* 47, 179–188, 1996.
21. Deepesh Machiwal and Madan K. Jha (2015). “Identifying sources of groundwater contamination in a hard-rock aquifer system using multivariate statistical analyses and GIS-based geostatistical modelling techniques”. *Journal of Hydrology: Regional Studies* 4 (2015) 80–110.
22. Deepesh Machiwal, Madan Kumar Jha, Vijay P. Singh, Chinchu, Mohan, “Assessment and mapping of groundwater vulnerability to pollution: Current status and challenges”, *Earth*

23. Deshpande S M and Aher K R, Evaluation of groundwater quality and its suitability for drinking and agriculture use in parts of Vaijapur, district Aurangabad, MS, India”, Research J. of Chemical Sciences, 2(1), 25- 31, 2012.
24. District Industrial Potential Survey Report of Bharuch District, (2016-2017), A Report of MSME – Development Institute, Ministry of Micro, Small & Medium Enterprises, Govt. of India.
25. District Industrial Potential Survey Report of Panchmahal District, (2016-2017), A Report of MSME – Development Institute, Ministry of Micro, Small & Medium Enterprises, Govt. of India.
26. District Industrial Potential Survey Report of Vadodara District, (2016-2017), A Report of MSME – Development Institute, Ministry of Micro, Small & Medium Enterprises, Govt. of India.
27. Dongfan Li , Yuanzheng Zhai, Yan Lei, Jie Li, Yanguo Teng, Hong Lu, Xuelian Xia, Weifeng Yue, Jie Yang, (2021), Spatiotemporal evolution of groundwater Nitrate nitrogen levels and potential human health risks in the Songnen Plain, Northeast China, *Ecotoxicology and Environmental Safety*
28. Ewa Krogulec and Joanna Trzeciak (2017). “DRASTIC assessment of groundwater vulnerability to pollution in the Vistula floodplain in central Poland”. *Hydrology Research* 48.4.
29. Fakhre Alam, Rashid Umar, Shakeel Ahmed and Farooq Ahmad Dar (2014) A new model (DRASTIC-LU) for evaluating groundwater vulnerability in parts of central Ganga Plain, India. *Arabian Journal of Geosciences*, vol. 7, pages 927–937
30. Ganeshkumar B and Jaideep C (2011). “Groundwater quality assessment using Water Quality Index (WQI) approach – Case study in a coastal region of Tamil Nadu, India”. *International Journal of Environmental Sciences and Research* Vol. 1, No. 2, 2011, pp. 50-55.
31. Groundwater Brochure, Bharuch District, A Report of Central Ground Water Board, West Central Region, Ahmedabad, (March 2014), Ministry of Water Resources, Government of India
32. Groundwater Brochure, Panchmahal District, A Report of Central Ground Water Board, West Central Region, Ahmedabad, (March 2014), Ministry of Water Resources, Government of India
33. Groundwater Brochure, Vadodara District, A Report of Central Ground Water Board, West

Central Region, Ahmedabad, (March 2014), Ministry of Water Resources, Government of India

34. Gupta, A. B.; Gupta, S. K. Presence of fluoride and Nitrates in drinking water and human health - A case study of Rajasthan; International Conference on Environmental Health and Technology, March 15-17, 2010, IIT, Kanpur.
35. Harter, T. and Walker, L.G. (2001). Assessing vulnerability of groundwater. University of California. Download from [www.dhs.ca.gov/ps/ddwem/dwsap/DWSAPindex.htm](http://www.dhs.ca.gov/ps/ddwem/dwsap/DWSAPindex.htm).
36. Hongwei Lu, Jing Li, Yizhong Chen and Jingzhao Lu (2019). "A multi-level method for groundwater remediation management accommodating non-competitive objectives". Journal of Hydrology S0022-1694(19)30061-7. <https://doi.org/10.1016/j.jhydrol.2019.01.018>.
37. Indian Standard, Drinking Water – Specification (IS-10500 2012).
38. Indian Standards Specifications for drinking water IS: 10500-2012. <http://cgwb.gov.in/Documents/WQ-standards.pdf>
39. Insaf S. Babiker, Mohamed A.A. Mohamed, Tetsuya Hiyama, Kikuo Kato, "A GIS-based DRASTIC model for assessing aquifer vulnerability in Kakamigahara Heights, Gifu Prefecture, central Japan", Science of the Total Environment (2005), Volume 345 pages 127– 140.
40. Juanjuan Wu, Jianmin Bian, Hanli Wan, Yuxi Ma and Xiaoqing Sun (2021). "Health risk assessment of groundwater nitrogen pollution in Songnen Plain". Ecotoxicology and Environmental Safety 207 (2021) 111245. <https://doi.org/10.1016/j.ecoenv.2020.111245>.
41. Kaiser, H.F., "The varimax criterion for analytic rotation in factor analysis". Psychometrika 23, pp.187–200, 1958. <https://doi.org/10.1007/BF02289233>
42. Kaplay R D and Patode H S, Groundwater pollution due to industrial effluent at Tuppa, New Nanded, Maharashtra. India Environ. Geol. 46, 871– 882, 2004.
43. Karanth, K.R., 1987. Groundwater Assessment: Development and Management. Tata McGraw-Hill Publishing Company Limited, New Delhi, pp. 720
44. Kazem Nosrati and Miet Van Den Eeckhaut (2010). "Assessment of groundwater quality using multivariate statistical techniques in Hashtgerd Plain, Iran". Environ Earth Sci (2012) 65:331–344. DOI 10.1007/s12665-011-1092-y.
45. Kumar D and Ahmed S, Seasonal behaviour of spatial variability of groundwater level in a granitic aquifer in monsoon climate. Current Sci., 84(2), 188-196, 2003.
46. Laura Debernardi, Domenico Antonio De Luca and Manuela Lasagna (2018). "Correlation between Nitrate concentration in groundwater and parameters affecting aquifer intrinsic

- vulnerability”. *Environ Geol* (2008) 55:539–558 DOI 10.1007/s00254-007-1006-1.
47. M. K. Sinha, M. K. Verma, I. Ahmad, K. Baier, R. Jha and R. Azzam (2016). “Assessment of groundwater vulnerability using modified DRASTIC model in Kharun Basin, Chhattisgarh, India”. *Arab J Geosci* (2016) 9: 98 DOI 10.1007/s12517-015-2180-1.
  48. Machiwal, D., Jha, M.K., 2014a. Characterizing rainfall-groundwater dynamics in a hard-rock aquifer system using time series, geographic information system and geostatistical modelling. *Hydrol. Process.* 28, 2824–2843.
  49. Meena A K, Mishra G K, Rai P K and Nagar P N, Treatment of heavy metals contaminated ground water using GAC, National conference on carbon (Indo- carbon 2001) Anand proceeding, 15-19, 2001.
  50. Mehrdad Bastania and Thomas Harter (2019). “Source area management practices as remediation tool to address groundwater Nitrate pollution in drinking supply wells”. *Journal of Contaminant Hydrology* 226 (2019) 103521. <https://doi.org/10.1016/j.jconhyd.2019.103521>.
  51. Mehta, M. Status of groundwater and policy issues for its sustainable development in India. In *Proceedings: Groundwater Research and Management: Integrating Science into Management and Decisions*; Sharma, B. R., Vill holth, K. G., Sharma, K. D., Eds.; International Water Management Institute: Colombo, 2006; pp62-74.
  52. Michał Kozłowski and Mariusz Sojka (2019). “Applying a Modified DRASTIC Model to Assess Groundwater Vulnerability to Pollution: A Case Study in Central Poland”. *Pol. J. Environ. Stud.* Vol. 28, No. 3 (2019), 1223-1231. DOI: 10.15244/pjoes/84772.
  53. Mohammad Muqtada Ali Khan, Rashid Umar and Habibah Lateh (2010). “Assessment of aquifer vulnerability in parts of Indo Gangetic plain, India”. *International Journal of the Physical Sciences* Vol. 5(11), pp. 1711-1720, ISSN 1992 – 1950.
  54. Mohan R, Singh A K, Tripathi J K and Chowdhary G C, Hydrochemistry and quality assessment of groundwater in Naini Industrial Area, Allahabad district, Uttar Pradesh. *J. Geol. Soc. India*, 55, 77-89, 2010.
  55. Mohapatra U K and Singh B C, Trace metals in drinking water from different sources in old capital city of Cuttak”. *Ind. J. of Environ. Health*, 41(2), 115–120, 1999.
  56. Mona Khakhar, Jayesh P. Ruparelia and Anjana Vyas (2017). “Assessing groundwater vulnerability using GIS-based DRASTIC model for Ahmedabad district, India”. *Environ Earth Sci* (2017) 76:440. DOI 10.1007/s12665-017-6761-z.
  57. Mondal N C and Saxena V K, Assessment of groundwater pollution due to tannery industries

- in and around Dindigul, Tamilnadu, India. *Environ Geol*, 48,149-157, 2005.
58. Mufid al-hadithi (2012). “Application of water quality index to assess suitability of groundwater quality for drinking purposes in Ratmao –Pathri Rao watershed, Haridwar District, India”. *American Journal of Scientific and Industrial Research*. ISSN: 2153-649X, doi:10.5251/ajsir.2012.3.6.395.402.
59. N. Kazakis, C. Mattas, A. Pavlou, O. Patrikaki and K. Voudouris (2017). “Multivariate statistical analysis for the assessment of groundwater quality under different hydrogeological regimes”. *Environ Earth Sci* (2017) 76:349. DOI 10.1007/s12665-017-6665-y.
60. N. Suresh Nathan, R. Saravanane and T. Sundararajan (2017). “Spatial Variability of Ground Water Quality Using HCA, PCA and MANOVA at Lawspet, Puducherry in India”. *Computational Water, Energy and Environmental Engineering*, 2017, 6, 243-268. doi.org/10.4236/cweee.2017.63017.
61. Nair, C. K. G. The little big polluters. *The Hindu* 1997, (March 20), 16.
62. National Research Council (1993) *Groundwater vulnerability assessment, contamination potential under conditions of uncertainty*, National Academy Press, Washington DC.
63. Nirmala B, Suresh Kumar B V, Suchetan P A and Shetprakash M, seasonal variations of Physico –chemical characteristics of ground water sample of Mysore city, Karnataka, India. *Int. J. Env.sci.*, 1(4), 43-49, 2012.
64. P. Napolitano & A. G. Fabbri, “Single-parameter sensitivity analysis for aquifer vulnerability assessment using DRASTIC and SINTACS”, *HydroGIS 96: Application of Geographic Information Systems in Hydrology and Water Resources Management (Proceedings of the Vienna Conference, April 1996)*. IAHS Publ. no. 235, 1996
65. Poonam Tirkey, Tanushree Bhattacharya, Sukalyan Chakraborty and Suman Baraik (2017). “Assessment of Groundwater Quality and Associated Health Risks: A case study of Ranchi city, Jharkhand, India”. *Groundwater for Sustainable Development* S2352-801X (17) 30049-8. <http://dx.doi.org/10.1016/j.gsd.2017.05.00>.
66. Prakash R Gupte, (2010), “Hydrogeological conditions, Ground Water Resources & Development potential of Vadodara District, Gujarat”, A Report of Central Ground Water Board, West Central Region, Ahmedabad, Ministry of Water Resources, Government of India
67. Prashant Kumar, Baban K.S. Bansod, Sanjit K. Debnath, Praveen Kumar Thakur, C. Ghanshyam, “Index-based groundwater vulnerability mapping models using hydrogeological settings: A critical evaluation”, *Environmental Impact Assessment Review* (2015), Volume-

51, pages 38–49

68. Ragab ElSayed Rabeiy (2018). “Assessment and modelling of groundwater quality using WQI and GIS in Upper Egypt area”. *Environ Sci Pollut Res* (2018) 25:30808–30817 DOI 10.1007/s11356-017-8617-1.
69. Rajaram, T.; Das, A. Water pollution by industrial effluents in India: Discharge scenarios and case for participatory ecosystem specific local regulation. *Futures* 40 2008, 56–69.
70. Ramappa R and Suresh T S, Quality of groundwater in relation to agricultural practices in Lokapavani river basin, Karnataka, India. *Proceedings of International Seminar on Applied Hydrogeochemistry*, Annamalai University, 136–142, 2000.
71. Rashid Umar, A. K. (2010) Assessment of aquifer vulnerability in parts of Indo Gangetic plain, India. *International Journal of Physical Sciences*, 5(11):1711–1720
72. Ruihui Chen, Yanguo Teng, Haiyang Chen, Weifeng Yue, Xiaosi Su, Yaning Liu and Qianru Zhang (2020). “A coupled optimization of groundwater remediation alternatives screening under health risk assessment: An application to a petroleum contaminated site in a typical cold industrial region in Northeastern China”. *Journal of Hazardous Materials* S0304-3894(20)32787-4. <https://doi.org/10.1016/j.jhazmat.2020.124796>.
73. Shankar B S, Balasubramanya N, Reddy M T M, Impact of industrialization on groundwater quality –a case study of Peenya industrial area, Bangalore, India. *Environ. Monitoring and Assessment*,142,263-268, 2008.
74. Sharma S K, Tiwari A N and Nawale V P, Nitrate Pollution in Ground water of Nagpur city area. *Proc Nati Conf Polln Prev Contl India: IAEM*, 2 – 3 March 2002, Nagpur, 173–176, 2002.
75. Shirazi SM, Imran HM, Akib S, Yusop Z and Harun ZB (2013) Groundwater vulnerability assessment in the Melaka State of Malaysia using DRASTIC and GIS techniques. *Environ Earth Science* 70:2293–2304
76. Tapasya Tomer, Deeksha Katyal, Varun Joshi, “Sensitivity analysis of groundwater vulnerability using DRASTIC method: A case study of National Capital Territory, Delhi, India”, *Groundwater for Sustainable Development* (2019), Volume 9.
77. Tathagata Ghosh and Rolee Kanchan (2014). “Geo-environmental appraisal of groundwater quality in Bengal alluvial tract, India: a geochemical and statistical approach”. *Environ Earth Sci* (2014) 72:2475–2488. DOI 10.1007/s12665-014-3155-3.
78. USEPA (1992) Guidelines for exposure assessment, EPA/600/Z-92/001. Risk Assessment Forum, Washington DC

79. USEPA (1999) Guidance for performing aggregate exposure and risk assessments. Office of Pesticide Programs, Washington DC
80. Verma N K, Jain O P and P K, Shrivastava, Preliminary studies on heavy metals in ground water of Mandeeep by Atomic Adsorption spectroscopy Proc, Acad, Environ. Biology, 4(1):123-126, 1995.
81. Wabaluti Rambai, Dissertation Phase-1, Evaluation of water quality index and computation of Environ. health indicators-case study, S.G.S.I.T.S. Indore, 2013.
82. Ward, J.H., "Hierarchical grouping to optimize an objective function." J. Am. Stat. Assoc. 58 (301), pp. 236–244, 1963.
83. World Health Organization, "Guidelines for Drinking Water Quality", Volume 1, pp: 1-668, 2008. [https://www.who.int/water\\_sanitation\\_health/dwq/fulltext.pdf](https://www.who.int/water_sanitation_health/dwq/fulltext.pdf)
84. Yadav S S and Kumar R, Contamination of fluoride content in ground water of Rampur city, Uttar Pradesh, India.J.Ultra chem., 6(2),181- 186, 2010.
85. Yan Guo Teng, Rui Zuo, Yanna Xiong, Jin Wu, Yuan Zheng Zhai and Jie Su (2019). "Risk assessment framework for Nitrate contamination in groundwater for regional management". Science of the Total Environment 697 (2019) 134102. <https://doi.org/10.1016/j.scitotenv.2019.134102>.
86. Yang, Z.R.; Yang, Z. (2014). Comprehensive Biomedical Physics. Karolinska Institute, Stockholm, Sweden: Elsevier. p. 1. ISBN 978-0-444-53633-4. Archived from the original on 28 July 2022. Retrieved 28 July 2022.
87. Yogesh S. Patel and Dr. G.P.Vadodaria (2015). "Groundwater quality assessment using water quality index". HYDRO 2015 20th International Conference on Hydraulics, Water Resources and River Engineering. Groundwater in 33% of India undrinkable. The Times of India. March 12, 2010.