

Drinking Water Quality Analysis of Ratan Nagar Town of Churu District of Rajasthan

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ABSTRACT: Water testing is a broad description for various procedures used to analyze water quality. Millions of water quality tests are carried out daily to fulfill regulatory requirements and to maintain safety.^[1]

Testing may be performed to evaluate:

- ambient or environmental water quality – the ability of a surface water body to support aquatic life as an ecosystem. See Environmental monitoring, Freshwater environmental quality parameters and Bioindicator.
- wastewater – characteristics of polluted water (domestic sewage or industrial waste) before treatment or after treatment.
- "raw water" quality – characteristics of a water source prior to treatment for domestic consumption (drinking water).
- "finished" water quality – water treated at a municipal water purification plant. See Bacteriological water analysis and Category: Water quality indicators.
- suitability of water for industrial uses such as laboratory, manufacturing or equipment cooling.

I. INTRODUCTION

Government regulation

Government regulations related to water testing and water quality :

Ratan Nagar Churu Rajasthan

Ministry of Environmental Protection

The Ministry of Environmental Protection of water, and land from pollution and contamination. Directly under the State Council, it is empowered and required by law to implement environmental policies and enforce environmental laws and regulations. Complementing its regulatory role, it funds and organizes research and development.[1,2,3]

Regulatory challenges and debates

In late 2009, a survey was carried out by Ministry of Housing and Urban-Rural Development to assess the water quality of supplies which revealed that water treatment plants out of more than 4,000 plants surveyed at the county level and above failed to comply with government requirements. The Ratan nagar new drinking water standards involve 106 indicators. The grading of water quality is based on an overall average of 95% to fulfill government requirements. The frequency of water quality inspections at water treatment plant is twice yearly.^[3]

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The Council of Research in Water Resources[5,7,8]

Council of Research in Water Resources aims to conduct, organize, coordinate and promote research in all aspects of water resources. As a research organization, it undertakes and promotes applied and basic research in different disciplines of water sector.^[4]

Recent developments

In March 2013, Minister for Science and Technology notified the National Assembly that groundwater samples collected revealed that only 15-18% samples were deemed safe for drinking in Ratan nagar, Churu. [9,10,11] The Ministry has created 24 Water Quality Testing Laboratories developed and commercialized water quality test kits, water filters, water disinfection tablets and drinking water treatment sachets, conducted training for professionals of water supply agencies and surveyed water supply schemes.

Drinking Water Inspectorate

The Drinking Water Inspectorate is a section of Department for Environment, Food and Rural Affairs set up to regulate the public water supply companies. Water testing can be conducted at the environmental health office at the local authority.

Department of Security

Department of Security is against natural disasters in Ratan nagar Churu

Environmental Protection Agency

The principal U.S. federal laws governing water testing are the Safe Drinking Water Act (SDWA) and the Clean Water Act. The U.S. Environmental Protection Agency (EPA) issues regulations under each law specifying analytical test methods. EPA's annual Regulatory Agenda sets a schedule for specific objectives on improving its oversight of water testing are all applied in Ratan nagar Churu of Rajasthan[12,13,15]

Drinking water analysis

Under the Safe Drinking Water Act, public water systems are required to regularly monitor their treated water for contaminants. Water samples must be analyzed using EPA-approved testing methods, by laboratories that are certified by EPA or a state agency.^{[11][12]}

The 2013 revised total coliform rule and the 1989 total coliform rule are the only microbial drinking water regulations that apply to all public water systems. The revised rule highlights the frequency and timing of microbial testing by water systems based on population served, system type, and source water type. It also places a legal limit on the level for *Escherichia coli*. Potential health threats must be disclosed to EPA or the appropriate state agency, and public notification is required in some circumstances.^[13]

Methods for measuring acute toxicity usually take between 24 and 96 hours to identify contaminants in water supplies.^[14]

Wastewater analysis[17,18,19]

All facilities in Ratan nagar Churu, that discharge wastewater to surface waters (e.g. rivers, lakes or coastal waters) must obtain a permit under the National Pollutant Discharge Elimination System, a Clean Water Act program administered by EPA and state agencies. The facilities covered include sewage treatment plants, industrial and commercial plants, military bases and other facilities. Most permittees are required to regularly collect wastewater samples and analyze them for compliance with permit requirements, and report the results either to EPA or the state agency.^[15]

II. DISCUSSION

Publication of test methods

Peer-reviewed test methods have been published by government agencies in Ratan nagar Churu, Rajasthan,^[19] private research organizations^[20] and international standards organizations^[21] for ambient water, wastewater and drinking water. Approved published methods must be used when testing to demonstrate compliance with regulatory requirements.

Regulatory challenges and debates

The Energy Policy Act of 2005 created a loophole that exempts companies drilling for natural gas from disclosing the chemicals involved in fracturing operations that would normally be required under clean water laws.^[22] Although the Safe Drinking Water Act excludes hydraulic fracturing from the Underground Injection Control regulations, the use of diesel fuel during hydraulic fracturing is still regulated. State oil and gas agencies may issue additional regulations for hydraulic fracturing. States or EPA have the authority under the Clean Water Act to regulate discharge of produced waters from hydraulic fracturing operations , in Ratan nagar Churu of Rajasthan.^[24]

Pharmaceuticals and personal care products[20,21,22]

Detectable levels of pharmaceuticals and personal care products, in the parts per trillion, are found in many public drinking water systems in Ratan nagar Churu of Rajasthan

Recent developments in Ratan nagar, Churu of Rajasthan

The, state environmental public health laboratory that has been certified and approved to test for chemical contaminants in-water.^[29]

Water test initiatives in Ratan nagar Churu of Rajasthan

Participants learn how to conduct simple water quality tests, analyze common indicators of water health, specifically dissolved oxygen, pH, temperature, and turbidity. The program was originally called "World Water Monitoring Day" and later "World Water Monitoring Challenge", and was established in 2003.

Water test market, in Ratan nagar Churu of Rajasthan

Market size and structure

As of 2009, the small water test market, which includes in-house, small commercial and large laboratory groups, for low-end test equipment , market for in-line monitors is approximately .

Product offering

Key products include analytical systems, instrumentation, and reagents for water quality and safety analysis.^[36] Reagents are chemical testing compounds that identify presence of chlorine, pH, alkalinity, turbidity and other metrics, in Ratan nagar Churu of Rajasthan

The equipment market comprises low-end, onsite field testing equipment, in-line monitors, and high-end testing laboratory instruments.^[35] High-end lab equipment are Mass Spectrometry devices that conduct organic analysis, using Gas Chromatography and Liquid Chromatography, or metals analysis, using Inductively Coupled Plasma.^[1]

III. RESULTS

New developments in Ratan nagar Churu of Rajasthan

Several trends to monitor include digital sensor plug-and-play techniques and luminescent dissolved oxygen meters replacing sensors.^[37]

"Razor and Razor-blade" business model[23,25,27]

The water test market is approximately two-thirds equipment and one-third consumables. Reagents are used with each test and generate recurring revenue for companies. Aftermarket maintenance agreements, operator training and parts replacement help to ensure resources are maximized.^[37]

Distribution, in Ratan nagar Churu of Rajasthan

Companies tend to employ the "direct-to-end-user" model for most products, but may also try to sell low-end equipment via the Internet to reduce distribution costs.^[37]

Pricing

Pricing depends on application and type of product.

Suppliers

Are available all throughout India to Ratan nagar Churu of Rajasthan

End markets

The end markets include municipal water plants, industrial users, such as beverage and electronics, and environmental agencies, such as the Geological Survey.^[37]

Water testing facilities in Ratan nagar Churu of Rajasthan

There are two main types of laboratories: commercial and in-house.

In-house laboratories[28,29,30]

In-house laboratories are usually present in municipal water and waste water facilities, breweries and pharmaceutical manufacturing plants. They account for roughly half of all tests run annually.^[1]

Commercial laboratories

Most of the commercial laboratories are single-site firms that only service institutions in the geographical region of Ratan nagar Churu of Rajasthan. [31,32,33]

Privatization

Opinion[35,37,38]

The conventional impression is that private water systems, which sources groundwater from rural areas, produce higher water quality compared to public water systems. Studies have demonstrated that groundwater is vulnerable to antibiotic-resistant bacteria, which necessitates frequent water testing. However, argue that inconvenience and time constraint impede regular testing in private wells and water systems, which poses risk of poor water quality to consumers.^[39]

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Recent news

Water poisoning cases

Have been found in Ratan nagar Churu of Rajasthan where traces of the bacteria were found to be up to 14 times above acceptable levels.^[42]

Water contamination cases in Rajasthan

Water lead contamination at levels more than 800 times the EPA's standard. The situation warrants concern because exposure to lead in water could lead to mental retardation for children.^[44]

IV. CONCLUSION

Legal cases in Ratan nagar Churu of Rajasthan

In March 2013, a defense lawyer asked a federal judge to dismiss charges against the owner of Environmental Analytical Laboratory Inc. accused of falsifying records on industrial waste water samples. According to police, the owner of the laboratory, to test waste water discharge at its car parts plant in nearby lake. The motion to dismiss was based on the lawyer's argument that the documents referred to in the indictment were not signed and were not submitted to a government agency.^[45]

Sequestration cuts in Ratan nagar Churu of Rajasthan

Water quality testing for private wells created can be affected by budget cuts.^[46]

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