NFFOODS Spectrum
perspectives on food technologies & business
ASIA

How Molecular Testing is Keeping you Safe from Food Hazards this Monsoon

27 August 2026 | Features | By Ajay Kandhari, Managing Director, DSS Imagetech Pvt. Ltd

Heavy rainfall and excess moisture create conditions for bacteria and other harmful microorganisms to thrive

Three months every year, July-August-September, is when the monsoon season across India becomes a hotbed for waterborne and food-borne diseases as well as other fungal and skin infections. High humidity, water logging and flooding, breeding of insects, and unsafe or exposed storage and handling of food can lead to food spoilage and microbial contamination, including hidden allergens that can make people very sick.

The risks become particularly significant across the food and water supply chain, where contamination may not always be visible to the naked eye. This makes reliable testing an important part of food safety, particularly during the monsoon when moisture, contaminated water and poor storage conditions can accelerate the growth and spread of harmful microorganisms.

How molecular diagnostics ensure food safety

Heavy rainfall and excess moisture create conditions for bacteria and other harmful microorganisms to thrive. Using contaminated water for washing, cooking or cleaning food increases food safety risks, as do moisture-related mould and microorganisms in grains, spices, nuts and other stored ingredients. Eating out at restaurants or consuming improperly stored food during the monsoon can therefore pose additional health risks.

Handling of ingredients by staff, shared preparation areas and inadequate storage conditions can also lead to cross-contact and bacterial contamination. Since many contaminants cannot be identified through visual inspection alone, molecular testing can help verify ingredient quality and strengthen food safety practices across the supply chain.

As consumers become increasingly aware of the food and water ecosystem, food manufacturers and dairy processors are increasingly using advanced molecular diagnostic solutions at different stages of production. These include testing kits for pathogen and allergen detection, species identification, GMO screening and DNA extraction.

For manufacturers and testing laboratories, such solutions can support the verification of raw materials and finished products, product authenticity and microbial quality before products reach consumers. This is particularly important during

the monsoon, when contamination risks can increase across sourcing, processing, storage and distribution.

Water safety

Water logging in residential areas during the monsoon can create conditions that contribute to the spread of serious diseases such as malaria, cholera, typhoid, dysentery, diarrhoea and hepatitis. Contaminants such as *E. coli*, *Salmonella*, Coliforms, *Shigella*, *Vibrio cholerae*, *Campylobacter* and *Legionella* can pose health risks when present in drinking water, making regular monitoring of water quality essential for community safety.

Molecular testing can play a critical role here by enabling laboratories and food businesses to examine samples at the DNA level and identify specific contaminants with high sensitivity and specificity. The ability to obtain results in less than three hours can help organisations act faster when contamination is suspected, allowing them to investigate the source, strengthen quality-control measures and prevent potentially unsafe water or food from moving further through the supply chain.

Beyond responding to individual contamination events, the wider adoption of molecular diagnostics can help build a more proactive approach to food and water safety. For manufacturers, laboratories and food businesses, timely testing can support better decision-making during a season when environmental conditions make contamination more likely.

Molecular diagnostic technologies are essential to preserve food safety all year round, but their role becomes particularly valuable during the rainy season, when increased humidity, water contamination and improper storage can heighten food and water safety risks.

When India's food ecosystem adopts molecular testing proactively, it can move towards a safer and more transparent food future, where potential hazards are identified earlier and food safety decisions are supported by reliable scientific testing.