



## **TETRADYN. LLC**

Applied Science in Threat Protection, Monitoring and  
Emergency Response Systems

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### **Rapid PCR-based Detection and Dissemination of Food-Borne Pathogen Data and Environmental Incidence Indicators**

Using a multiplexed realtime PCR platform that is compact, portable and ruggedizable, with customizable probe chip panels, we are able to obtain results for the analysis of food-borne pathogens within a matter of a few hours maximum from the point of sampling through to completion of the PCR process and transmission of results. The system architecture and protocols have been developed and tested in both research and clinical settings worldwide, under tests supervised by WHO and other entities, in the domains of viral pathogens (influenza, including H5N1 and H1N1 among many others (encompassing all current mainstream influenza strains) and WMD-class pathogens (anthrax, plague, smallpox, tularemia). The probe chip panel design for food-borne pathogens includes salmonella, listeria, e.coli, and several others and a customized panel can be constructed for only subtypes of salmonella with or without other pathogen types.

The sample preparation time varies for pathogen and for salmonella is estimated to be approximately 15-20 minutes. The duration of the analysis through to subtyping is a function of the PCR thermocycling and amplification of the genetic material. All results are produced in SQL-compliant and SML-compliant data structures that can be transmitted via internet. The main instrument is capable of handling up to five (5) tests (chip panels) simultaneously, thereby lending itself well to high-demand testing situations where there are diverse food types and sources to be tested.

Using this as the analytical foundation, we have integrated the informatics with two major functions. One is a situation-alert-notification module that enhances the ability of the instrument and the human technician to more rapidly estimate the probability of specific food stockpiles (e.g., warehouse, shipboard supplies, platoon supplies, etc.) having certain types of contamination. The other is a forecasting module that enhances the ability of the unit or laboratory operating the test equipment to project and predict the likely intensity of contamination and consequent susceptibility to illness and the disabling of bodily functions (including military effectiveness) among persons exposed to (and ingesting) the contaminated or at-risk food products.

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