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**(TECHNOLOGIES FOR SOCIETY)**

**Integrated milk analysis System for real-time wireless monitoring of  
milk supply chain**

The proposed system is unique and novel to address the problem of adulteration as well as milk composition measurement in Indian dairy industry by considering the adulterants commonly used in the supply chain of milk in India.

The problem of adulteration in milk with the adulterants such as Urea, salt, detergents, ammonium sulphate etc. exists in India. Furthermore, the milk supply chain in India is highly complex. Therefore, there is a great need to develop system which can cater to the need of real-time wireless monitoring and preventing milk adulteration in the supply chain as well as the real-time monitoring of other milk parameters like fat, solid non-fat, protein, lactose and water content in raw milk.

**System Capabilities-adulteration detection:**

The system is capable of detecting adulterants such as urea, salt, detergents, boric acid, caustic soda, Lye (NaOH), soda, hydrogen peroxide and many more unknown adulterates in raw milk. The system can detect minimum level of Urea:1gm/l; Salt: 2gm/l; detergent: 2gm/l; soda: 1gm/l; boric acid and hydrogen peroxide in ppm level.

**System Capabilities (Composition):**

The system is capable of measuring milk contents like butterfat (%), solid nonfat (%), proteins (%), lactose (%), density and added water (%) in milk. The system accuracy: for different parameters are Butterfat  $\pm 0.1\%$ ; Solid nonfat  $\pm 0.2\%$ ; Protein  $\pm 0.2\%$ ; Lactose  $\pm 0.2\%$  and water  $\pm 5\%$ .

**Other features:**

- Portable and user friendly
- Environmental friendly technology (chemical free)
- Auto calibration at field
- Measurement time: around one minute.
- Electrochemical detection for adulteration
- Low cost system