GOOD FOOD

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International Workshop & Training program on Good Food Laboratory Practices

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ROLE OF FOOD TESTING LABORATORIES FOR ASSURING FOOD SAFETY IN INDIA

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Food testing laboratories

Food testing laboratories play a critical role in detecting contaminations at various stages in the farm-to-table process and assist various stakeholders directly or indirectly in eliminating unsafe food from the supply chain.

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Food safety concerns – Historical trends

1960 – 70s
- Toxic metals
- Microbial contamination

1980 – 90s
- Pesticide residues at milligram level eg. Organochloro

1990 – 2000
- Pesticide residues at microgram level for multiple residues

2000 onwards
- Dioxins & precursors
- Toxins

2005 onwards
- Pesticide residues at microgram level for hundreds of residues
- Drug residues

2010 onwards
- Microbial flora identification, Viral testing , Peptide profiling, Allergens , Enzyme analyses

2015 onwards
- Pesticide & drug residues at nano / sub nano levels

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Quality management systems
ISO /IEC 17025-2005

Successful implementation helps laboratories to improve efficiencies and capture the knowledge and experience in to the system.

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Good food laboratory practice

It’s all about Quality and integrity of data!

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Key elements of a laboratory operation that impact data and its integrity

- Training and proficiency of analyst – who handles food samples, prepares reagents, operates analytical equipment, calculates and documents analytical data.

- Sample integrity – sampling process and sample handling according to established procedures.
  Correct and accurate labeling and identification (verification).
  Sample storage under defined conditions (pre, post & during testing).

- Integrity of reagents and their traceability.

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Key elements…

- Test equipment – validity per intended usage, calibrations and preventive maintenance.

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Historical trends in laboratory instrumentation

1970-80s	1980-2000	2000-2015	2016 +
Microprocessor based test equipment	Stand alone computerized Analytical Instrumentation, LIMS	A mix of stand alone networked Analytical instrumentation, LIMS, e-notebooks.	Client server network analytical instruments. Paperless Lab Solutions

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Computerized systems

Computerized systems need management controls and security features for ensuring data integrity :

- Assign and maintain access rights and privileges.
- Electronic signatures specific to authorized individuals, audit trails established and activated.
- Periodic data backup and verification.
- Archival of data and record retention along with recovery and contingency plans.
- Defined and controlled process for any modification to electronic /data records.

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Data

Increasing computerization in testing laboratory environment is generating voluminous data and it is a big challenge globally to all the stakeholders to ensure the attributes of “DATA” generated.

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Data

- Data is defined as *facts* that can exist in a variety of forms such as *numbers* or *text on paper* or *bits and bytes in electronic form*. In a laboratory the facts exist as *raw data,* on *paper or as electronic data*. The result of original observations, measurements and activities which are necessary for reconstruction and evaluation of a test result or project/study report form the raw data.

What, Who and When ??

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Data integrity

- *Data integrity* is a condition which exists when data is unchanged from its source and has not been accidentally or maliciously modified, altered or destroyed.
- Put simply, data integrity is the assurance that data is consistent, accurate, reliable, accessible and complete. This further assures that the test report generated by a testing laboratory is accurate.

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Key elements of a laboratory operation that impact data and its integrity

- Standard / validated test methods
- Good documentation practices
- OOS / OOT, repeat analysis
- Test reports
- Laboratory design and environmental conditions

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Emerging trends

- Green-technologies & Chemistry
- Growing demand for rapid microbial testing
- Allergen tests
- Scientific evaluation of processed foods shelf-life

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Big challenge

Ever growing rate of technological obsolescence !

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Conclusion

Uphold Quality and Integrity of data in your operations, that leads to professional satisfaction, protection of your reputation and serves the cause of food safety.

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Thank you !

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