

Food Traceability: Current Status and Future Opportunities

Food traceability describes a system that documents the history of a product through its entire production chain from primary raw materials to the final consumable products.

A food traceability system needs to be:

- fit-for-purpose, user friendly, globally accepted, and be feasibly incorporated into current industry practices and systems.
- compatible with the components of other food safety and quality management systems.



The fundamental pillars of traceability—the who, what, when, and where—must be unambiguously communicated through the supply chain.

- Key terms, like critical tracking events (CTE) and key data elements (KDE), provide the framework and foundation for an interoperable system that needs to be successfully applied by all partners in the supply chain to assure success.
- CTEs are supply chain events where data capture is necessary to achieve traceability. These are usually points of transfer or transformation like shipping, receiving, or processing.
- KDEs are the pieces of information or attributes that describe the events, the products, and the players involved at each CTE.

Global regulatory agencies have established traceability requirements to ensure the safety, security and legality of both domestically produced and imported products.

- The widespread practice of “one step forward, one step back” traceability is reflected in food regulations through the United States, the European Union, and Canada.
- The United States Food and Drug Administration (US FDA) published regulation in 2022 that pushes industry towards an “end-to-end” traceability approach with a defined set of baseline traceability requirements for certain commodities.

Traceability systems rely on good data, from trusted sources.

- The effectiveness of a traceability system directly correlates with the quality of the data collected. Comprehensive investment in system design and maintenance efforts (e.g., staff training, technology, standardization) is essential for cultivating quality data.
- Emerging tools and technologies like decentralized identifiers (DIDs) and verifiable credentials offer promising opportunities to improve trust in digital data.

Our ability to track and trace food depends upon systems that enable people to share information quickly and efficiently up and down the supply chain without fraud or errors.

- Collaborative efforts to standardize what data is collected, how data is formatted, and/or how data is exchanged enable easier and more efficient traceability systems.
- The FDA’s Food Traceability Rule standardizes data collection requirements for those that manufacture, process, pack, or hold food that are on the food traceability list.
- The GS1 Digital Link is a new standard that enables simplified sharing of GS1 standard identifiers using the broadly adopted QR barcode format.



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ABOUT IFT

The Institute of Food Technologists (IFT) is a global organization of approximately 12,000 individual members from more than 100 countries committed to advancing the science of food. Since 1939, IFT has brought together the brightest minds in food science, technology and related professions from academia, government, and industry to solve the world's greatest food challenges.

IFT works to ensure that its members have the resources they need to learn, grow, and advance the science of food as the population and the world evolve. IFT believes that science is essential to ensuring a global food supply that is sustainable, safe, nutritious, and accessible to all. For more information, please visit ift.org and ift.org/gftc.

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