



2008/6/9

ICT usage for Food Safety

- Food Traceability Systems in Japan -

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2008/6/9

Agenda


ICT usage for Food Safety
- Food Traceability Systems in Japan -

- What's Traceability?
- QP Corporation
- A Case of an internal traceability system
- Evaluations to the Food Allergen Check Site for Cellular Phones
- ICT usage for consumer trust

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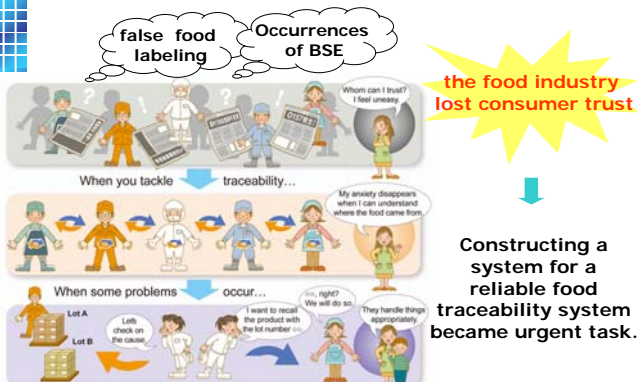


What's Traceability?



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The Reason Traceability Is in Demand



the food industry lost consumer trust

Constructing a system for a reliable food traceability system became urgent task.

4

Definition of "Food Traceability"

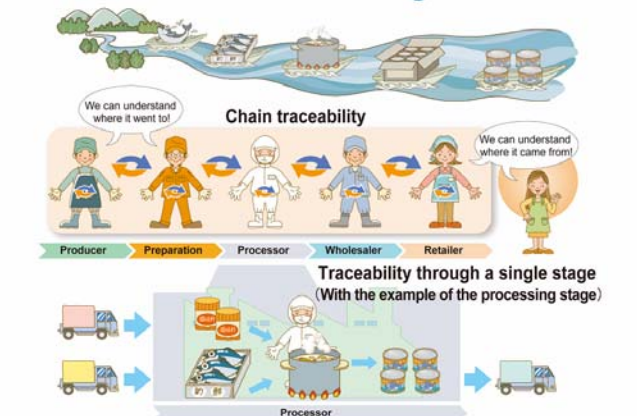
The ability to follow the movement of food through specified stage(s) of production, processing and distribution

Notes:

1. This is the definition agreed at Codex Alimentarius held in June-July of 2004.
2. "Ability to follow the movement" in this definition refers to tracing both directions; trace forward and trace back.
3. "Movement" can relate to the origin of the materials, processing history, or distribution.

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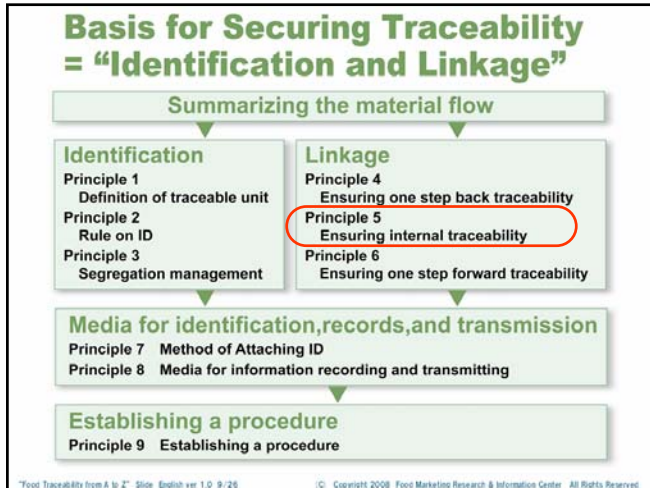
Food Traceability Is:



Chain traceability

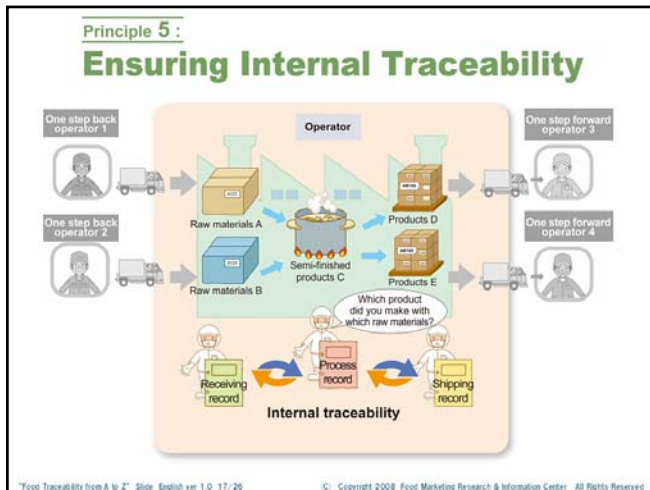
Traceability through a single stage (With the example of the processing stage)

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Q.P. Corporation
- A Case of an internal traceability system

出所: キューピー株式会社ホームページより



Q.P. Corporation

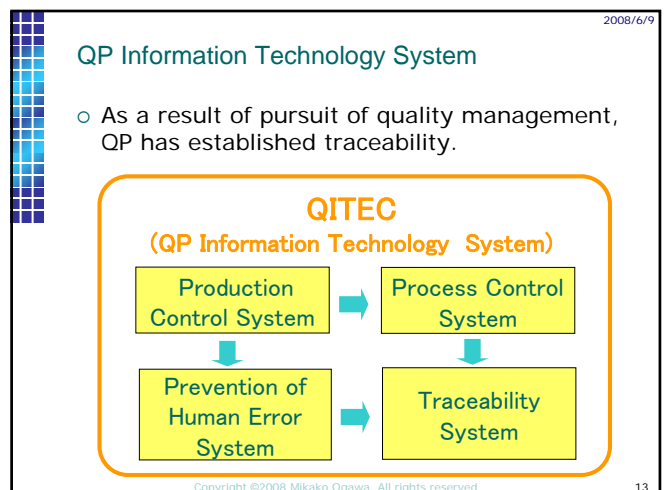
- Head Office: 1-4-13, Shibuya, Shibuyaku, Tokyo 150-0002, JAPAN
Established in 1919
- FY 2007
 - Net Sales: 468 billion yen
 - Net Income: 7.3 billion yen
 - Equity: 24 billion yen (US\$)
- 2,518 Employees
- 10 Branch Offices, 22 Sales Offices
- 9 Factories

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Business and Products

- Condiments and processed Foods Business**
mayonnaise, dressing, jam, pasta sauce, corn, spreads, etc.
- Health Function Products Business**
baby food, nursing care food, medical foods, health functions and medical materials
- Egg products Business**
egg material products such as liquid, frozen and dried eggs, etc.
- Salad and Prepared Foods Business**
Long-life salad, freezing vegetable, fried products, Baby foods, diet fluid, elder foods
- Distribution System Business**

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Raw materials with a label

Labels put by a Supplier



Check before weighting



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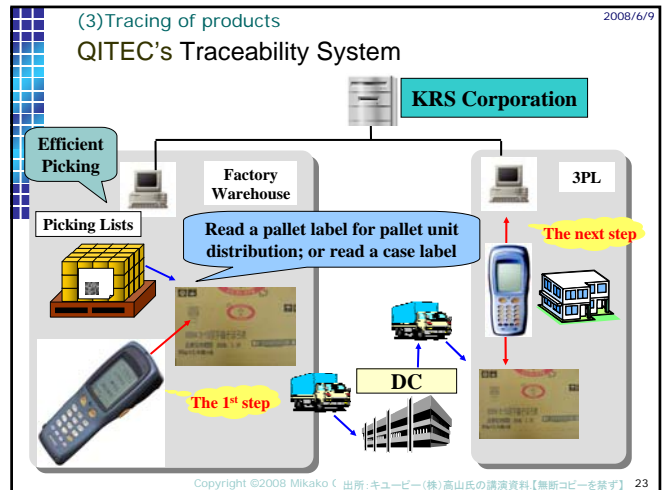
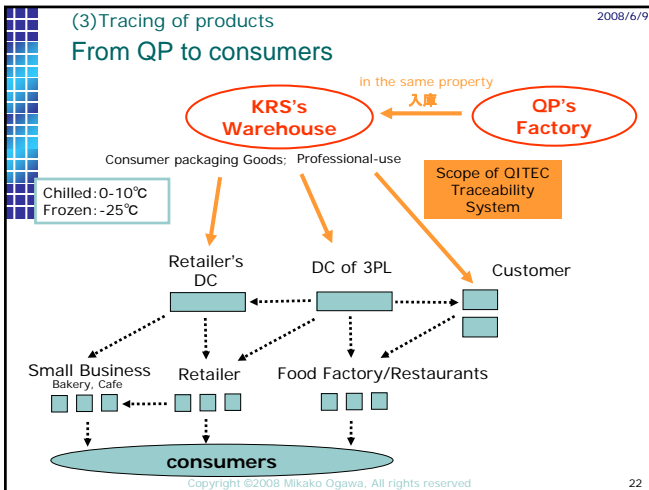
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(3)Tracing of products

- ②
- ①
- ③

- Implemented at the Tosu Factory (in Saga Pref.)
 - Traceable products: Baby Foods (132 items)
 - Handle 400 raw materials and 600 of other materials
 - 4 production lines, produce 2-3 items per a day
- Product Distribution
 - Operated by K.R.S. Corporation
 - Implemented "Traceability System" of QITEC
 - Distribution management from QP factory to customer's distribution centers
- Effects
 - Enabling products tracing by a case unit
 - Immediate Search (from 7-10 days to a few seconds)

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(3)Tracing of products KRS Warehouse



Products' cases in the warehouse




a pallet label for pallet unit distribution.

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(3)Tracing of products Search of shipping data



PC Screen in the office of KRS corporation

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(3) Tracing of products
Information for the Customer Relations

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Tosu Factory (Baby Foods' Line)
Quality Control by QITEC

Customer Relations

キユーピー高山氏の講演資料をもとに、一部編集
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(3) Tracing of products
QA Number to Access Products' Information

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Quality Assurance Number

Printed on products

Printed → Just after filling
Information → Best-before, Filling time, Line#

040311 FCEB

Best-before

Line#

minutes (4min)

minutes (20min)

hour (5 o'clock)

time A=0, B=1, C=2-----X=23

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Search Result of Traceability System

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No.	コード	製品名	荷役	賞味期限	QA No.	元用日時	ライン名
1	000588	♪♪♪♪♪	00022(400)	2004/09/11	1AAA	2002/09/19 08:00	398トウモロコシ

No.	コード	原料名	荷役	仕入先	荷役日	ロットNo.	賞味期限	種名	小分け日	投入量
1	007244	1502/1	0002/07/18	020709	2005/07/09	2002/09/14	2	1		
2	007244	1502/1	2003/07/18	020709	2005/07/09	2002/09/14	2	1		
3	007244	1502/1	2002/07/18	020709	2005/07/09	2002/09/14	2	5		
4	007244	1502/1	2002/07/18	020709	2005/07/09	2002/09/14	2	4		
5	007244	1502/1	2002/07/18	020709	2005/07/09	2002/09/14	2	5		
6	007244	1502/1	2002/07/18	020709	2005/07/09	2002/09/14	2	0		
7	007244	1502/1	2002/07/18	020709	2005/07/09	2002/09/14	2	7		
8	007244	1502/1	2002/07/18	020709	2005/07/09	2002/09/14	2	8		

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Effects of QITEC

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- Improvement of Quality Control
 - Prevention of the human errors is critical.
 - The wrong mistake has been ZERO
 - Decrease workers' mental stresses
- Reduction of term-end inventory
- Collaboration between suppliers
- Useful information flow from IT partners
- Financial effects ※Total amount has not disclosed.
 - License Fee: 10% (Basic Software is ¥3 million yen)
 - Consulting Fee: ¥100,000 yen
 - Sales Support (ex. Acquisition of new customers, agreement for raising a price)

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To Get Consumer Trust : QP 「Pattobi-J」

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- Baby Foods 52 items
- Get food allergen information by reading Bar-code

2007/6/2 News Lerease
Movie: <http://www.kewpie.co.jp/babyfood/mobile/pattobi.html>
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Evaluations to the Food Allergen Check Site for Cellular Phones
- ICT usage to get consumer trust

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Agenda

- Objectives
- Words
- Background
- History of our project
- Design of an allergen check site
- Monitor survey
- Conclusion
- Limitation and Future Work

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Objectives

To explain that...

- The food allergen check site is a useful tool for those suffering from allergies and their families.
- Our project have developed the allergen check site for cellular phones. In March 2008, We conducted a monitor survey.
- As a result of the survey, some revision of the design is necessary. Overall though, evaluations have been positive.

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words

- allergy: An overreaction of the immune system to particular substances. In the case of an allergy, the immune system produces symptoms which can be highly unpleasant and make a person ill.
- allergen: Triggers of allergy disease
- anaphylaxis : A critical allergy disease. In rare cases there may even be a life-threatening shock reaction.

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Background: Food Allergy

- Allergen in Japan: egg(39%),milk/dairy products(16%), and so on
 - 2000-2002, the Survey of Ministry of Helthcare and Welfare
- Infants have higher rates of allergy diseases.

● infant	10%
● three-year-old child	4~5%
● school going age	2~3%
● adult	1~2%

 - 平成15年度~17年度、厚生労働科学研究
 - 「食物等によるアナフィラキシー反応の原因物質(アレルゲン)の確定、予防・予知法の確立に関する研究」

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Background: Government Directives

- 2003 revision of the Food Sanitation Law
 - For processed foods
 - The law oblige to indicate 5 items,
 - wheat, soba, eggs, milk, peanuts
 - and recommend to indicate 20 items
 - abalone, cuttlefish, lobster, crab, salmon, mackerel, beef, chicken, pork, gelatine, soy beans, matsutake mushroom, yam, orange, kiwi, banana, peach, apple
- 2005 Approval of an Epinephrine Pen
 - the Ministry of Health and Welfare
 - A self-administered epinephrine kit for anaphylaxis

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History of our project

- 2006 : started the project in Keio Univ.
- 2007.4: transferred to TUMST, co-project between 2 universities started.
- 2007.5: patent survey
- 2007.10: started collaborative research with a mobile service company, Nepoland Co.,Ltd
- 2007.11: made a mock-up , poster presentation at Keio SFC Open Research Forum
- 2008.Mar: β version release, conducted a monitor survey

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Design of an allergen check site

- at the right time, to the right person, by the right way
 - Value of Information

誰に	どのような消費者を対象とするか 食物アレルギーを持つ人、家族(母親)
何を	情報項目: 食品に含まれるアレルギー情報 ※情報の定義「 不確実性、多義性を削減 」
どんな目的で	意思決定: 購買や選択の最終段階で 買う/買わない、食べる/食べない
どのように	携帯電話 商品に貼付したQRコードからサイトにアクセス アレルギーテーブル(一覧表: パターン認識能)

(Daft and Lengel, 1986)

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Allergen check site

2007.Oct version

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The characteristic of the allergen table

- fixed position
 - Allergens are displayed in a fixed position in the table.
- Grouping
 - 5 obliged items, marine products, meat products, vegetables, fruits
- Color
 - we use a plain color intuitively for every group. (ex. Blue for marine products, green for vegetables)
 - The allergen included in food is a red colored letter.
 - The allergen which is not included in food is a gray colored letter.

卵	乳	小麦	そば	落花生		
あわび	いか	いくら	えび	かに	ぎけ	ぎぼ
牛肉	とり肉	ぶた肉	せう	テン		
大豆	まっ	やま				
いも	いも					
オレンジ	モウイ	くるみ	バナナ	もも	りんご	

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The allergen check site

Ver 2008.3

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Monitor Survey (2008/3)

Sampling Target	List of PAFA* members who are registered e-mail addresses (200 people)
Period	2008/2/19~3/15
Requesting Form	e-mail (questionnaire sheet by Microsoft Word)
Responding	e-mail, fax, mail
# of Valid Answers	19/20
Notes	¥500 yen worth remuneration for an answer

*PAFA: Parent's Association for Food Allergy Patients

Divided into 2 groups by differences in Daily use function

- A group (7) 「phone call・e-mail・site」
- B group (11) 「phone call・e-mail」&「e-mail」

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Research Questions

- Evaluation for operation
 - Reading QR-code
 - Preferable Way to access information
- Needs for each function (screen) or content
 - Product Info (image, the allergen table, ingredients)
 - Raw materials Information
 - Glossary
 - Product search
- Needs for the allergen check site for cellular phones and/or PCs

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Operation : Reading a QR code

- A: Positive answer 100%
- B: Positive answer 33%, Neutral 25%, Negative answer 42%

QRコードの読み取り操作

Group	使いやすい	やや使いやすい	どちらともいえない	やや使いにくい	使いにくい
全体	6	5	3	1	4
A群	2	5	0	0	0
B群	4	0	3	1	4

Easy, Fairly Easy, Neutral, Fairly Difficult, Difficult

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Operation : Preferable way to access information

- Preferable way to access product information by cellular phone

携帯から商品情報にアクセスする際の操作(複数回答)

Group	QRコード読取	バーコードの数字入力	URL入力	その他	どれも嫌
全体	14	8	2	1	0
A群	6	2	2	0	0
B群	8	6	0	0	0

- QR code
- Input number of barcode
- Input URL
- Others
- Dislike all

Bar-code

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The allergen table was supported

- 60% people gave positive evaluations to the allergen table.

	Positive	Neutral	Negative
A	43%	43%	14%
B	75%	25%	0%

Good or Bad?

アレルギーテーブルをどう思うか

Do you need it?

アレルギーテーブルの必要性

good, fairly good, neutral, fairly bad, bad Yes, fairly yes, neutral, rather not, not

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Needs for product search was high

- If you check some allergens, you can search products which are not made from the allergens.

	Positive	Neutral	Negative
A	71%	29%	0%
B	92%	0%	8%

チェックした原材料を使用していない商品の検索機能

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Indeed, do you use the allergen check site for cellular phones?

	Positive	Neutral	Negative
A	86%	0%	14%
B	58%	17%	25%

実際、携帯電話でアレルギーチェックサイトが使えたら、あなたは使いますか?

Yes, fairly yes, neutral, fairly no, no

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Where would you like to use the allergen check site?


- 9 people: At restaurants/fast food shops
- 8 people: At a supermarket
- 4 people: At home

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Conclusion

- The food Allergen check site is a useful tool for those suffering from allergies and their families.
- Some revision of the design is necessary. Overall though, evaluations have been positive.
- They clearly show that the demands and expectations for information services via cellular phones are high.



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Limitation and Future Work

Limitation: Just a 20 monitor survey

Future Work:

- Improvement of design
- Information access via a bar-code (not via a QR code)
- Providing this service for PC users has to be the next step. As it stands, people pay a lot of money for foods or cooking goods to prevent them suffering from allergy reactions.



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- Thank you.
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