From food adulteration to food contamination –
The challenges of regulating food in South Asia
A Case study of Gujarat

Presentation by
Dr. H.G. Koshia,
Commissioner of Food Safety,
Gujarat State, INDIA

Venue: Mangnolia Hall, India Habitat Center, New Delhi
GUJARAT
A State with Vibrant Opportunities
**Destination Gujarat**
A state with strong economic indicators

Gujarat has been ranked 2nd as per the “Economic Freedom of the States of India 2011”

- Growth in agricultural output in the state over the last 5 years: **12.6%**
- Increased seat availability in technical institutions over last 3 years: **> 100%**
- A state with a population of 60 million with one of the highest urbanization levels: **42.6%**
- A state with one of the highest per capita income: **USD 1094**
**Strong Economy**

- Gross State Domestic Product: **USD 73.69 billion**
- An economy on the boom, GSDP growth of more than 10% since 2004-05
- Top contributor to Indian economy, around 20% of Indian exports contributed by Gujarat
- Beating recession, more than 10% growth in times of global recession
- Delivering promises, State with highest number of MoU realization
- GSDP Average Growth (2005-10): **10.31%**
- Per Capita Income: **USD 1089.5** (National Average: US$ 749.6)
- Manufacturing Sector: **USD 20.19 billion**
- Urbanisation: **42.6%**

Gujarat’s share in India:

- Population: 4.98%
- Employment: 9.93%
- Geographical area: 5.96%
- GSDP: 6.83%
- Net Value Added (manufacturing): 11.77%
- Value of Output: 15.54%
- Fixed Capital Investment: 16.30%
- Exports: 22.00%

Source: Socio-economic review, Gujarat State 2010-11, * 1 USD = INR 45
Gujarat: an exciting tourist destination

Gujarat offers a wide array of choices for tourists including heritage monuments, archaeological sites, wild life sanctuaries and beaches

- Gujarat ranks among the top ten states visited by domestic tourists
- Historical sites with ancient Jain, Hindu, Muslim and Buddhist monuments
- Archaeological sites representing the Mohenjo-Daro civilizations
- Palaces, forts and caves, heritage structures and monuments
- Forest and natural ecosystems like wetlands and wildlife parks
- Pristine beaches lie along the 1,600 km coastline of the State with unique flora and fauna
Agro and Food Processing Industry in India

- India is world’s second largest food producer – mainly because of diverse agro-climatic conditions and a large irrigated area.
- The size of the Indian food industry was estimated at 185 billion USD in 2009-10 and expected to grow to over USD 315 billion USD by 2020.
- India is the largest producer of milk, fruits, pulses, cashew nuts, coconuts and tea in the world.
- Government of India expects USD 22 billion of investments in food processing infrastructure by 2015.
- Providing employment to over 48 million people.

Geographical advantage – nearness to export markets
Large agriculture sector and livestock base
100% FDI under automatic route (except beer, alcohol, specific SSI)
GoI vision 2015 plan focusing on trebling the food processing sector
Overview of the sector in Gujarat

- Out of the total geographical area of 188 lakh hectares in Gujarat, cultivable area is around 124 lakh hectares (66%).

- Wheat, bajra, rice, maize, groundnut, mustard, sesame, pigeon pea, green gram, gram, cotton, sugar cane, mango, banana, cheeku, lime, guava, tomato, potato, onion cumin, garlic, isabgul and fennel are the major crops.

- Gujarat is the largest producer of castor, tobacco, isabgul (psyllium) and the second largest producer of sesame seeds, cotton and groundnut in the country.

Land use pattern in Gujarat

- Forest
- Area under non-Agrl. usage
- Barren & unculturable Land
- Permanent pasture & other grazing land
- Land under misc. trees & Crops
- Cultivableable Waste Land
- Other fallow
- Current fallow
- Net Area sown
## Overview of the sector in Gujarat

<table>
<thead>
<tr>
<th>Step</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw Material</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Production</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Procurement and Storage</strong></td>
<td></td>
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<tr>
<td><strong>Primary Processing</strong></td>
<td></td>
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<tr>
<td><strong>Value added Processing</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Retailing</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **Major Crops**: Rice, Wheat, Maize, Oilseeds, Cotton, Fruits, Vegetables and Spices
- **Working Factories**: Out of the 2.3 lakh working factories employing 12.90 lakh, 17,922 factories belong to food and agro products
- **Vast Network of Market centers & Yards**: APMCs, Cold storage units, Main Yards, 3 Agri export zones, Agri commodity exchange
- **Processing units**: Oil seed processing units, Fruits & Vegetable processing units, Fish processing units, Milk processing units including co operative sector dairies and private sector dairies
- **Major players in food processing industry**: Parle, Vadilal, Rasna, Reliance Fresh, Adani, Godrej Agrovet, Vimal and Amul
- **Education & Research**: 4 Agricultural Universities providing education and conducting research in various field of agriculture
- **Food and Agro Small industry clusters in districts in Gujarat**: Milk products – Ahmedabad & Rajkot; Rice and Dal Processing – Ahmedabad & Anand; Confectionary – Ahmedabad; Salts – Amreli, Kutch, Surandranagar & Rajkot; Ice Candy – Porbandar; Tobacco – Mehsana, Patan, Anand; Processed spices & papads - Ahmedabad
# Educational infrastructure

4 Agricultural Universities, 4 excellence centers in each university

<table>
<thead>
<tr>
<th>Junagadh Agriculture University</th>
<th>Anand Agriculture University</th>
<th>Sardarkrushinagar Dantiwada Agricultural University</th>
<th>Navsari Agricultural University</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Has three constituent colleges offering courses in agriculture, Agricultural Engineering and Technology and Fisheries</td>
<td>• Offers higher courses in Agriculture, Veterinary, Dairy Science, Animal Husbandry and Food Processing</td>
<td>• Offers courses in faculties such as Agriculture, Veterinary Science and Home Science</td>
<td>• Imparts higher education in the faculty of Agriculture, Horticulture and Forestry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main Oilseed research station, Junagadh</th>
<th>Agri Engineering research station, Junagadh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse research station, Junagadh</td>
<td>Cotton research station, Junagadh</td>
</tr>
<tr>
<td>Vegetable research station, Junagadh</td>
<td>Sugarcane research station, Kodinar</td>
</tr>
<tr>
<td>Cattle breeding farm, Junagadh</td>
<td>Oilseed research station, Amreli</td>
</tr>
<tr>
<td>Wheat research station, Junagadh</td>
<td>Millet research station, Jamnagar</td>
</tr>
<tr>
<td>Dry farming research station</td>
<td>Junagadh Agricultural University</td>
</tr>
<tr>
<td>Main Oilseed research station, Junagadh</td>
<td>Agri Engineering research station, Junagadh</td>
</tr>
</tbody>
</table>
Gujarat Food and Agro Sector – Success Story
Amul: The brand that spurred a white revolution

formed in 1946, managed by Gujarat Cooperative Milk Marketing Federation limited (GCMMF)
Dairy No. 1 in Asia and Dairy No. 2 in the world
Amul has more than 150 chilling centres in villages
Exports to Mauritius, UAE, Bangladesh, Australia, China, South Africa, Singapore, Malaysia, Nepal, Pakistan, Hong Kong

• Aims for a Rs. 10,000 crore turnover in 2010
• Procures 7 million litres from 2.6 million dairy farmers
• Distributes 5 lakh in the country

Future:
• Amul has signed an agreement with Wal-Mart to stock its products in Wal-Mart stores in USA
• Looking to offer low-fat version of its products
• Planning to enter Japan and Srilanka
• Tie up with Glaxo to sell baby food

The key success factors are – strong supply chain and distribution network, diversified product line, low cost strategy, adoption of technology and e-initiatives
PepsiCo’s support has increased from 20 farmers in 2007 to over 600 farmers in 2009 - 10

PepsiCo Non Contract Farming procurement in Gujarat - Tonnes

- Heavy fluctuation in market prices
- No assured buy back
- Highly risky
- No intangible benefits
- Lower crop yields results in lower gross income

PepsiCo Contract Farming Production in Gujarat - MT

- Assured buy back, lesser risk
- Price declared 6 months in advance
- High crop yields - higher returns
- Best quality agro inputs- advice
- Huge benefits from intangible benefits
  - Technological support
  - Constant advice for plant protection
  - Incentives for superior practices
  - New varieties
About FDCA
**FDCA - Main functions**

- To regulate the manufacture, distribution and sale of Food, Drugs (Allopathic, Ayurvedic, Homeopathic), & Cosmetics.

- To grant and renew Licenses of Food & Drugs Establishments, including additional product license.

- To issue various certificates like WHO-GMP, GMP, FSC, NCC, COPP... etc.

- Inspections of Manufacturing and Sales Units of Food & Drugs.

- To draw Samples of Food and Drugs articles.

- To analyze the samples of Food and Drugs articles.

- To investigate the complaints received from public for Food and Drugs articles.
Food testing laboratories

FDCA
- RFL Rajkot
  - PA-1
- FDL Baroda
  - PA-3
- RFL Bhuj
  - PA-3

Municipal Corporations
- Ahmedabad Municipal Corporation
  - PA-1
- Baroda Municipal Corporation
  - PA-1
- Surat Municipal Corporation
  - PA-2
Progressive Strength of posts sanctioned for the implementation of FSSA Act
FDCA Circle Offices – Statewide presence

FDCA Circle Offices: 18 + 6 = 24

- Existing Office
- New Office
- Laboratories
- Proposed laboratory


**Data related to samples taken v/s adulteration in the state**

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th></th>
<th>2007</th>
<th></th>
<th>2008</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample</td>
<td>12033</td>
<td>Adulterated</td>
<td>794</td>
<td>% Adulteration</td>
<td>6.60</td>
<td></td>
</tr>
<tr>
<td>Total Sample</td>
<td>11243</td>
<td>Adulterated</td>
<td>660</td>
<td>% Adulteration</td>
<td>5.87</td>
<td></td>
</tr>
<tr>
<td>Total Sample</td>
<td>10983</td>
<td>Adulterated</td>
<td>737</td>
<td>% Adulteration</td>
<td>6.71</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th></th>
<th>2010</th>
<th></th>
<th>2011</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample</td>
<td>9716</td>
<td>Adulterated</td>
<td>538</td>
<td>% Adulteration</td>
<td>5.54</td>
<td></td>
</tr>
<tr>
<td>Total Sample</td>
<td>6534</td>
<td>Adulterated</td>
<td>456</td>
<td>% Adulteration</td>
<td>6.98</td>
<td></td>
</tr>
<tr>
<td>Total Sample</td>
<td>5829</td>
<td>Adulterated</td>
<td>377</td>
<td>% Adulteration</td>
<td>6.46</td>
<td></td>
</tr>
</tbody>
</table>
Information taken regarding samples taken v/s adulteration in Gujarat

<table>
<thead>
<tr>
<th>YEAR</th>
<th>% Adulteration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>6.6</td>
</tr>
<tr>
<td>2007</td>
<td>5.87</td>
</tr>
<tr>
<td>2008</td>
<td>6.71</td>
</tr>
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<td>2009</td>
<td>5.54</td>
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<td>2010</td>
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</tr>
</tbody>
</table>
Food inspector training programme at GCRT
Training at Karai

Commissioner of Food Safety,
Food & Drugs Control Administration,
Gujarat State, Gandhinagar.

Seminar on Food Safety and Consumer Awareness

Chief Guest
Mr. Justice M. R. Shah
Honorable Judge, Gujarat High Court.

Venue: Police Training Academy Auditorium
Karai, Dist. Gandhinagar.
Date: 23/4/2011
Time: 9.30 am
Training at Karai
Training to APPs
Training of D.O. by FSSAI
Food Cases - Progress in Conviction rate

- Prosecution Decided
- Convicted

% of Conviction

- 2006: 141
- 2009: 113
- 2010: 122
- 2011: 138

2006: 16%
2009: 24%
2010: 57%
2011: 50%
Important Raids
Artificial flavour of Ghee
<table>
<thead>
<tr>
<th><strong>PRODUCT</strong></th>
<th>PEANUT FLAVOUR OIL 146655C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NETT</strong></td>
<td>5 KG</td>
</tr>
<tr>
<td><strong>BATCH NO</strong></td>
<td>11ADP001328-1</td>
</tr>
<tr>
<td><strong>MANUFACTURING DATE</strong></td>
<td>Feb 2011</td>
</tr>
<tr>
<td><strong>EXPIRY DATE</strong></td>
<td>Feb 2012</td>
</tr>
<tr>
<td><strong>STORAGE</strong></td>
<td>Keep in its original packing, tightly closed, protected from air, light and at room temperature.</td>
</tr>
<tr>
<td><strong>MANUFACTURER</strong></td>
<td>MATRIX FLAVOURS &amp; FRAGRANCES SDN. BHD.</td>
</tr>
<tr>
<td></td>
<td>No. 11, Jalan SS 18/6, Subang Jaya, 47500 Petaling Jaya, Selangor Darul Ehsan, Malaysia</td>
</tr>
</tbody>
</table>
Adulteration in Groundnut Oil
Duplicate Mawa raid
Carbide banned, fruit traders use new ripening chemicals to escape law

Since use of calcium carbide is banned, fruit traders are now using other ripening agents to avoid facing action. State wants the Centre to amend rules and prohibit chemicals that alter nutritional value of fruits.

But since this has now been banned, the traders are resorting to newer, harmful alternatives, to keep their business going. Use of these chemicals is not illegal, but it poses a grave health hazard.

State Food and Drugs Control Administration (FDCA) authorities say that scores of traders in three major markets in the city — Dana Pith Market, Sindhhi Fruit Market and Naroda Market — are resorting to new chemicals, other than the banned calcium carbide, to artificially ripen fruits. They want the Centre to amend rules and include various hazardous chemicals doubling up as ripening agents in the list of banned substances.

In a letter to Food Safety and Standards Authority of India (FSSAI), the state food and drugs control authorities have said that traders sprinkle plant growth hormones like ethephon directly on unripe fruits to advance its ripening.

Gujarat Food and Drugs Commissioner H G Coshiya said: “We have collected evidence regarding usage of scale plant growth hormones to ripen fruits. Most banana traders use it. We have submitted the report to FSSAI. A sample was sent for test to food and drugs laboratory in Vadodara. The report showed that many chemicals, some of them carcinogenic, were used in ripening fruits.

“Right now, as per law, we can only take action against those using carbides. But what do we do if traders use other chemicals that alter not just a fruit’s natural taste but even its nutritional value.”

Last year, FDCA took action against 110 carbide users. This year, however, traders have resorted to chemicals like Bethylene.

Though not considered harmful if used within permissible limits, the traders usually use excess amounts to ripen fruits faster, altering the taste and the nutritional value of the fruit besides reducing its shelf-life.

ARTIFICIAL AGENTS
CALCIUM CARBIDE: It contains traces of arsenic and phosphorous and thus use of this chemical is illegal in the country.

This white powder once dissolved in water releases acetylene which might accelerate the ripening process but degrades the neurological system, affecting the eyes, skin, lungs, memory and leads to prolonged hypoxia.

ETHEPHON: A plant growth regulator with systemic properties, it penetrates into plant tissues, and is decomposed to ethylene, which affects the growth processes. It promotes pre-harvest ripening in apples, currants, blackberries, blueberries, cranberries, morello cherries, citrus fruits, figs, tomatoes, sugar beet and fodder beet seed crops, coffee, capiscums. It accelerates post-harvest ripening in bananas, mangoes, and citrus fruits.

Right now, as per law, we can only take action against those using carbides. But what if traders use other chemicals?

— H G Coshiya
Commissioner, FDCA
Street Food Vendors before Training
Street Food Vendors before Training
Before Training – Street Food Vendors
Street Food Vendors before Training
Training of Street Food Vendors
Training to Street Vendors
Training to Street Vendors
Change noticed in hygienic practices
Change noticed in hygienic practices
Change noticed in hygienic practices
Visit of officers after training
Visit of officers after training
Your favourite street food, now served with hygiene

Vendors at Law Garden and Manek Chowk are now donning gloves while preparing food, and also disposing of leftovers with due care.

Paras K Jha, Gandhinagar

Now you can savour your favourite dishes at Law Garden and Manek Chowk in a more hygienic fashion. Staff at the food stalls there are now donning gloves and head gear and disposing of the leftovers in a hygienic manner.

State food and drug control administration (FDCA) officials now visit Law Garden every Thursday to check the result of the training programme they imparted to street vendors last week and, interestingly, they have found that the course has been fruitful.

If you can get good results by training them, why impose a penalty on the vendors, asks the commissioner of state food and drug control administration (FDCA). HG Koshia, while sharing his experience of training the food sellers.

A training prog on hygiene was conducted for the vendors last week, and it appears to have borne fruit.

Koshia said, "They were not 'raids' by the FDCA. We had organised a training programme on hygiene and sanitation for the vendors of Law Garden and Manek Chowk. We wanted to see the outcome so we visited the places. I found that most of the vendors and their waiters were using gloves and head gear while serving food and they were also clearing the left-over food in the manner in which they were trained.

According to the FDCA commissioner, the programme was an initiative to educate the vendors in hygiene and sanitation. "We were expecting about 60 vendors from both the places but the turn-out was more than 70. I personally talked to some foreigners who were eating at these food joints during our survey on Thursday. They were happy to learn about the state government's concern for hygiene and sanitation," said Koshia. He added, "Now, looking at the positive response of the vendors, we will soon organise another similar training schedule. We are planning to invite hotel management experts who can train these vendors in food preparation and cooking in a hygienic way. Ultimately we have to ensure better quality and healthy food for the people."
Testing Kit
The kit has 21 items for testing of food articles like synthetic milk, oil, tea, milk, sweet, ghee.
Distribution of Testing Kit
Media news for testing kit
Initiatives by FDCA, Gujarat

Exhibition Cum Mobile Testing Van
Awards and Accreditations
Dignitaries visit to FDCA
Dr. P.I. Suvarthan  Ex. C.P. of FSSAI
Mr. K. Chandramouli, Chair Person, FSSAI
Launch of Pilot Project for Reg. & Lic. of FBO

LAUNCH OF
FOOD LICENSING & REGISTRATION SYSTEM (FLRS)
by
Mr. Justice M.R. Shah
Hon. Judge High Court Gujarat
on
Friday, 13th January 2012
ટફાર અને ઓષ્ધમાં યથી
લેખિયે રોકો....
તુરણી ક્રિયા કરો

“ટફાર અને ઓષ્ધમાં યથી લેખિયે રોકને વગતી નાનતો-ગેરિયાળ/સાહિતી તંત્રે ભાપવા માટે તા. 01-12-2017 થી
ટોલ કી નં.

1800 233 5500

શરૂ કરેલ છે.” આ નંબર પર જાડર જનતા સવારના
10.30 થી સંજના 6.00 કલાક સુધી સંપર્ક કરી શકે છે
અથવા વ૆બસાઇટ : www.gujhealth.gov.in/complaint
પર ઓનલાઈન ક્રિયા પણ કરી શકે છે.

સમિતની પ્રતિ વ્યક્તિ,
ટફાર અને ઓષ્ધ નિયમન તંત્ર
ગુજરાત રાજય - ગાંધીનગર
Food & Drug laboratory under construction at Siddhpur, Patan
Thank you