marketing, and foreign trade are now recognized at different levels. Food safety issues have thus been at the core of extensive scientific and legal literature, with a focus on the most critical aspects of the subject and its intersection with other key legal issues (*e.g.* consumer protection, biotechnology and safety of genetically modified organisms, application of the precautionary principle, traceability of products, quality standards setting, responses to bioterrorist threats, freedom of public health risks).

Scientists and legal scholars have to pay special attention to the management of foodborne diseases, which are indeed a source of major concern for the whole international community.

These diseases encompass abroad spectrum of illnesses causing morbidity and mortality worldwide and their real overall health impact on the world population is yet unknown.

Moreover, globalization of trade has led to the rapid and widespread international marketing of food products, demanding that the most careful controls be carried out along the entire food-chain from "farm to fork". Whenever such controls fail – and food production and distribution fall short of complying with regulations and standards set either at national or international level – the potential likelihood of transboundary incidents involving tainted food increases, and global health is hence seriously put at risk.

For the reasons stated above, international food safety is perceived as a global challenge. In the wake of a trend towards more efficient food safety policies, the 2007 Beijing Declaration on Food Safety gives voice to the global community's concern that a comprehensive and integrated approach be adopted, prompting all stakeholders to take cooperative and concerted actions and strengthening links between the different sectors involved. The Declaration, in fact, recognizes that "integrated food safety systems are best suited to address potential risks across the entire food-chain from production to consumption" and that "oversight of food safety is an essential public health function that protects consumers from health risks". In this perspective, it mainly urges States to develop transparent regulation to guarantee safety standards; to ensure adequate and effective enforcement of food safety legislation using risk-based methods; to establish procedures, including tracing and recall systems in conjunction with industry; to rapidly identify, investigate and control food safety incidents and to alert the World Health Organization (WHO) of those events falling under the revised International Health Regulations. In short, the Declaration expresses the need to understand food safety as both a national and an international responsibility.

Moving from the consideration that food safety issues and the enhancement of health security are of growing international concern, it is interesting to inquire whether the international community is provided with the appropriate legal instruments to face foodborne hazards globally.

LAW RELATING TO FOOD PROCESSING

By

—V.G. RANGANATH, M.L. (Ph.D),
Faculty Member, Faculty of Law,
IFHE University, Hyderabad, A.P.

Food processing is any deliberate change in a food that occurs before it's available for us to eat. It can be as simple as freezing or drying food to preserve nutrients and freshness, or as complex as formulating a frozen meal with the right balance of

nutrients and ingredients. Food processing is the set of methods and techniques used to transform raw ingredients into food or to transform food into other forms for consumption by humans or animals either in the home or by the food processing industry. Food processing typically takes clean, harvested crops or slaughtered and butchered animal products and uses these to produce attractive, marketable and often long-life food products. Similar processes are used to produce animal feed. Extreme examples of food processing include the delicate preparation of deadly fugu fish or preparing space food for consumption under zero gravity.

Food processing methods Beer fermenting at a brewery, Common food processing techniques include: Removal of unwanted outer layers, such as potato peeling or the skinning of peaches, Chopping or slicing *e.g.* diced carrots, Mincing and macerating, Liquefaction, such as to produce fruit juice, Fermentation *e.g.* in beer breweries, Emulsification, Cooking, such as boiling, broiling, frying, steaming or grilling, Deep frying, Baking, Mixing, Addition of gas such as air entrainment for bread or gasification of soft drinks, Proofing, Spray drying, Pasteurization and Packaging. The other examples of processed foods are vegetable and fruit products, sea foods, biscuits, confectionary, dairy products, beverages, sweetmeats, salty foods *etc.*

In India, Food processing dates back to the prehistoric ages when crude processing incorporated slaughtering, fermenting, sun drying, preserving with salt, and various types of cooking (such as roasting, smoking, steaming, and oven baking). Salt-preservation was especially common for foods that constituted warrior and sailors' diets, up until the introduction of canning methods. Evidence for the existence of these methods exists in the writings of the ancient Greek, Chaldean, Egyptian and Roman civilisations as well as archaeological evidence from Europe, North and South America and Asia. These tried and tested processing techniques remained essentially the same until the advent of the industrial revolution. Examples of ready-meals also exist from pre-industrial revolution times such as the Cornish pasty and the Haggis.

Modern food processing technology in the 19th and 20th century was largely developed to serve military needs. In 1809 *Nicolas Appert* invented a vacuum bottling technique that would supply food for French troops, and this contributed to the development of tinning and then canning by *Peter Durand* in 1810. Although initially expensive and somewhat hazardous due to the lead used in cans, canned goods would later become a staple around the world. Pasteurization, discovered by *Louis Pasteur* in 1862, was a significant advance in ensuring the micro-biological safety of food.

In the 20th century, World War II, the space race and the rising consumer society in developed countries (including the United States) contributed to the growth of food processing with such advances as spray drying, juice concentrates, freeze drying and the introduction of artificial sweeteners, colouring agents, and preservatives such as sodium benzoate. In the late 20th century products such as dried instant soups, reconstituted fruits and juices, and self cooking meals such as MRE food ration were developed.

In Western Europe and North America, the second half of the 20th century witnessed a rise in the pursuit of convenience, food processors especially marketed their products to middle-class working wives and mothers. Frozen foods found their success in sales of juice concentrates and "TV dinners". Processors utilised the perceived value of time to appeal to the postwar population, and this same appeal contributes to the success of convenience foods today.

Regulation and Control of Food Processing

Most of the processed food items have been exempted from the purview of licensing under the Industries, Development and Regulation, Act, 1951, except items reserved for small-scale sector and alcoholic beverages.

As per extent policy Foreign Direct Investment upto 100% is permitted under the automatic route in the food infrastructure like Food Park, Cold Chain and warehousing. As far as food retail is concerned the FDI policy does not permit FDI into retail sector except Single Brand Product Retailing. This policy is uniform for all retailing activity. FDI policy for manufacture of items reserved for the Small Scale Industry sector is uniform for all items so reserved and a separate dispensation for items in the food-processing sector is not contemplated. The policy for distillation of alcohol has been announced *vide* Press Note 4 (2006) according to which FDI upto 100% is permitted on the automatic route for distillation and brewing of alcohol subject to licensing by the appropriate authority. No industrial licence is required for almost all of the food and agro processing industries except for some items like beer, potable alcohol and wines, cane sugar, hydrogenated animal fats and oils *etc.*, and items reserved for exclusive manufacture in the small scale sector. Items reserved for S.S.I. include pickles and chutneys, bread, confectionery, excluding chocolate, toffees and chewing-gum *etc.*, rapeseed, mustard, sesame and groundnut oils (except solvent extracted), ground and processed spices other than spice oil and oleoresins, sweetened cashew nut products, tapioca sago and tapioca flour. Use of foreign brand names is now freely permitted the Government. MRTP (Monopolies and Restrictive Trade Practices Act) rules and FERA (Foreign Exchange Regulation Act) regulations have been relaxed and given more freedom to encourage investment and expansion by large corporates. Most of the items can be freely imported and exported except for items in the negative lists for imports and exports. Capital goods are also freely importable, including second hand ones in the food-processing sector.

Food processing is invaluable to the consumer. Foodstuffs are processed with the following objectives:[1]

(1) To preserve the surplus produce in order to meet the demand during off-seasons and times of scarcity.

(2) To prevent qualitative and quantitative losses of nutrients

(3) To make the foods available to civilians and armed forces in places far away from the points of production.

(4) To provide better returns and thereby the required incentive to the grower so that he produces more food.

(5) To help the consumer to save time and labour.

(6) To provide for the export of foodstuffs which can earn important foreign exchange

(7) To formulate convenient foods suitable for various categories of population such as baby foods, weaning foods, invalid foods *etc.*

(8) To facilitate fortification of the common foods with required nutrients in order to correct the nutritional deficiencies in people. The Indian diet is known to be deficient in proteins, vitamin A, calcium and iron.

(9) To permit the formulation of food blends with specified nutritive value which will serve as the basis for ready-to-serve products for mass feeding.

1. *Venkateswara Rao Yetukuri*, 'Commentary on Food Safety and Standards Act, 2006' Asia Law House, 1st Edition, 2010-11.

(10) To provide subsidiary foods to supplement nutritionally deficient diets.

The agriculture sector has come a long way since Independence. With the onset of green revolution, India has transformed itself from a country of shortages to one of surpluses. The rapid growth of the economy has also provided a shift in the consumption pattern, from cereals to more varied and nutritious diet of fruit and vegetables. This has resulted in the development of the food processing industry.

The food processing sector in the country with its vast potential has emerged as one of the major drivers of economic growth. It is encouraging to note that Economic Outlook has pegged GDP growth rate for 2011-12 at 8.2% in spite of the EU crisis and other issues being faced. The food processing industry in India is growing at 14% annum.

India is a country of over 1.21 billion consumers; 300 million upper and middle-class consume processed food. There is a large untapped domestic market of 1,000 million consumers in the food processing sector and 300 million more consumers are expected to shift to processed food by 2012. It is the second-largest producer of fruits and vegetables in the world. Further, India has tremendous potential to unleash large-scale process-based farm activities to exploit the emerging global business opportunities.

Rules & Regulations[2]

The Indian Government is making headway in quality assurance in the food processing industry by bringing in various rules and regulations. One can see them being well-implemented at various food fairs as well as industry body events taking place across the country throughout the year. Various laboratories are also being set up with the help of Government for research and development in quality management. The rules and regulations are also looked into from time to time by industry body and the industry. Some of the vital rules and regulations that comprise the growing awareness of quality assurance include:

- Fruit Products Order, 1955, promulgated under Section 3 of the Essential Commodities Act, 1955, aims at regulating sanitary and hygienic conditions in manufacture of fruit and vegetable products. Besides this, maximum limits of preservatives, additives and contaminants have also been specified for various products.

- The draft specifications in respect of 61 products have been discussed by the Central Fruit Products Advisory Committee and recommended to the Government for adoption.

- A number of prestigious laboratories have been assisted in upgrading facilities for finding the quality revolution in the country.

- The introduction of preventive approaches such as the Hazard Analysis Critical Control Point System (HACCP), have resulted in the industry taking greater responsibility for and control of food safety risks. Such an integrated approach facilitates improved consumer protection, effectively stimulates agriculture and the food processing industry, and promotes domestic and international food trade. The installation of ISO: 9000 Quality Management Systems and HACCP-based food safety system is extremely desirable in view of the changing scenario in the international trade. Under the scheme of Quality Assurance 22 Food Testing Labs have been assisted and 14 units under

2. http://www.fnbnews.com/article/detnews.asp?articleid=31304&SectionId=23 (Last visited on May 25, 2012).

HACCP/ ISO certification have been assisted.

- The Ministry of food processing industries (MoFPI) is implementing the Scheme of Research and Development and Quality Control to enable adherence to stringent quality and hygiene norms to face global competition and export. It is also providing financial assistance to support research and experiment and adoption of food safety and quality assurance mechanism to keep the Indian food processing industry, technologically abreast of international best practices.

- The Codex Alimentarius Commission (CAC) is an interGovernmental body that coordinates food standards at the international level. Its main objectives are to protect the health of consumers and ensure fair practices in food trade. The CAC has proved to be most successful in achieving international harmonisation in food quality and safety requirements.

- The conclusion of the Uruguay Round of Multilateral Trade Negotiations in Marrakech led to the establishment of the WTO on January 1, 1995, and to the coming into force of the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT). Both these agreements are relevant in understanding the requirements for food protection measures at the national level, and the rules under which food is traded internationally.

- The Food and Agriculture Organisation of the United Nations (FAO) and the World Health Organisation (WHO) have formulated scientific principles and guidelines, which address all sectors of the food chain.

Greater responsibility

Effective national food control systems are essential to protect the health and safety of domestic consumers. They are also critical in enabling other countries to assure the safety and quality of their foods entering international trade and to ensure that imported foods conform to national requirements. The new global environment for food trade places considerable obligations on both importing and exporting countries to strengthen their food control systems and to implement and enforce risk-based food control strategies. Consumers are taking unprecedented interest in the way food is produced, processed and marketed, and are increasingly calling for their respective Governments to accept greater responsibility for food safety and consumer protection.

Production of high quality processed foods meeting international quality standards and regulations may very well open new frontiers for Indian food products. This will not only create a dynamic and competitive domestic food processing industry but will also enable India to become a major player in the global food market. An attitudinal change towards quality is essential.

Context of food processing under Food Safety and Standards Act, 2006

According to Food Safety and Standards Act, 2006 the consumer can make a claim which means any representation which states, suggests, or implies that a food has particular qualities relating to its origin, nutritional properties, nature, processing, composition or otherwise.

Penalty for unhygienic or unsanitary processing or manufacturing of food [3]

Any person who, whether by himself or by any other person on his behalf,

3. Section 56 of the Food Safety and Standards Act, 2006

manufactures or processes any article of food for human consumption under unhygienic or unsanitary conditions, shall be liable to a penalty which may extend to one lakh rupees.

Processed contaminated food is considered as 'Contaminant'

"contaminant" means any substance, whether or not added to food, but which is present in such food as a result of the production (including operations carried out in crop husbandry, animal husbandry or veterinary medicine), manufacture, **processing**, preparation, treatment, packing, packaging, transport or holding of such food or as a result of environmental contamination and does not include insect fragments, rodent hairs and other extraneous matter[4].

The word "extraneous matter" means any matter contained in an article of food which may be carried from the raw materials, packaging materials or process systems used for its manufacture or which is added to it, but such matter does not render such article of food unsafe[5].

Processed Food is also a Food

The word "Food" means any substance, whether processed, partially processed or unprocessed, which is intended for human consumption and includes primary food to the extent defined in clause (zk), genetically modified or engineered food or food containing such ingredients, infant food, packaged drinking water, alcoholic drink, chewing gum, and any substance, including water used into the food during its manufacture, preparation or treatment but does not include any animal feed, live animals unless they are prepared or processed for placing on the market for human consumption, plants, prior to harvesting, drugs and medicinal products, cosmetics, narcotic or psychotropic substances[6].

Food Additives used in Food Processing

The word "food additive" means any substance not normally consumed as a food by itself or used as a typical ingredient of the food, whether or not it has nutritive value, the intentional addition of which to food for a technological (including organoleptic) purpose in the manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food results, or may be reasonably expected to result (directly or indirectly), in it or its by-products becoming a component of or otherwise affecting the characteristics of such food but does not include "contaminants" or substances added to food for maintaining or improving nutritional qualities[7].

Food business is also a Food Processing

"Food business" means any undertaking, whether for profit or not and whether public or private, carrying out any of the activities related to any stage of manufacture, processing, packaging, storage, transportation, distribution of food, import and includes food services, catering services, sale of food or food ingredients[8].

Manufacture

The word "manufacture" means a process or adoption or any treatment for conversion of ingredients into an article of food, which includes any sub-process, incidental or ancillary to the manufacture of an article of food[9].

Unhygienic processing is considered as unsafe food

The word "unsafe food" means an article of food whose nature, substance or quality

4. Section 3(1)(g) of the FSS Act, 2006.
5. Section 3(1)(i) of the Act.
6. Section 3(1)(j) of the Act.
7. Section 3(1)(k) of the Act.
8. Section 3(1)(n) of the Act.
9. Section 3(1)(zc) of the Act.

is so affected as to render it injurious to health by virtue of its unhygienic processing or the presence in that article of any harmful substance[10].

Composition of Food Authority and qualifications for appointment of its Chairperson and other Members

The Food Authority shall consist of a Chairperson and the following twenty-two members out of which one-third shall be women, namely:- (a) seven Members, not below the rank of a Joint Secretary to the Government of India, to be appointed by the Central Government, to respectively represent the Ministries or departments of the Central Government dealing with - (i) Agriculture, ii) Commerce, (iii) Consumer Affairs, **(iv) Food Processing**[11], (v) Health, (vi) Legislative Affairs, (vii) Small Scale Industries, who shall be Members ex officio.

Central Advisory Committee.

The Food Authority shall, by notification, establish a Committee to be known as the Central Advisory Committee[12]. The Central Advisory Committee shall consist of two members each to represent the interests of food industry, agriculture, consumers, relevant research bodies and food laboratories and all Commissioners of Food Safety, and the Chairperson of the Scientific Committee shall be ex officio member. The representatives of the concerned Ministries or departments of the Central Government in Agriculture, Animal Husbandry and Dairying, Bio-technology, Commerce and Industry, Consumer Affairs, Environment and Forests, Food Processing Industries, Health, Panchayati Raj, Small Scale Industries and Food and Public Distribution or Government institutes or organisations and Government recognised farmers' shall be invitees to the deliberations of the Central Advisory Committee.

Duties and functions of Food Authority regarding Food Processing

It shall be the duty of the Food Authority to regulate and monitor the manufacture, processing, distribution, sale and import of food so as to ensure safe and wholesome food. It shall also be the duty to regulate and monitor the limits for use of food additives, crop contaminants, pesticide residues, residues of veterinary drugs, heavy metals, processing aids, myco-toxins, antibiotics and pharmacological active substances and irradiation of food[13].

Use of food additive or processing aid[14] *:* No article of food shall contain any food additive or processing aid unless it is in accordance with the provisions of this Act and regulations made thereunder.

Explanation.–For the purposes of this section, "processing aid" means any substance or material, not including apparatus or utensils, and not consumed as a food ingredient by itself, used in the processing of raw materials, foods or its ingredients to fulfil a certain technological purpose during treatment or processing and which may result in the non-intentional but unavoidable presence of residues or derivatives in the final product.

Dietary uses-Food Processing

The "foods for special dietary uses or functional foods or nutraceuticals or health supplements" means:

(a) foods which are specially processed or formulated to satisfy particular dietary requirements which exist because of a particular physical or physiological condition or specific diseases and disorders and which are presented as such, wherein the composition of these foodstuffs must differ

10. Section 3(1)(zz.iii) of the Act.
11. Section 5 of the Act
12. Section 11 of the Act
13. Section 16(2)(b) of the Act
14. Chapter IV-General Principles as to Articles of Food, S.19 of the Act.

significantly from the composition of ordinary foods of comparable nature, if such ordinary foods exist, and may contain one or more of the following ingredients, namely:

Responsibilities of the Food business operator

(1) Every food business operator shall ensure that the articles of food satisfy the requirements of this Act and the rules and regulations made thereunder at all stages of production, processing, import, distribution and sale within the businesses under his control[15].

Food recall procedures[16]

If a food business operator considers or has reasons to believe that a food which he has processed, manufactured or distributed is not in compliance with this Act, or the rules or regulations, made thereunder, he shall immediately initiate procedures to withdraw the food in question from the market and consumers indicating reasons for its withdrawal and inform the competent authorities thereof.

Survey of Food Processing Units

The Commissioner of Food Safety shall perform to carry out survey of the industrial units engaged in the manufacture or processing of food in the State to find out compliance by such units of the standards notified by the Food Authority for various articles of food.

Prohibition orders[17]

(1) If—

(a) any food business operator is convicted of an offence under this Act; and

(b) the Court by or before which he is so convicted is satisfied that the health risk exists with respect to that food business, the Court, after giving the food business operator an opportunity of being heard, may by an order, impose the following prohibitions, namely a prohibition on the use of the process or treatment for the purposes of the food business.

The Food Safety and Standards Act, 2006 provides[18] the General Provisions relating to offences and penalties[19]. A person may render any article of food injurious to health by means of subjecting the food to any other process or treatment, with the knowledge that it may be sold or offered for sale or distributed for human consumption. In determining whether any food is unsafe or injurious to health, regard shall be had to the normal conditions of use of the food by the consumer and its handling at each stage of production, processing and distribution;

The Food Safety and Standards Regulations[20] provides the list of food processing business falling under the purview of Central Licensing Authority

1. Vegetable oil processing units and units producing vegetable oil by the process of solvent extraction and refineries including oil expeller unit having installed capacity more than 2 MT per day

2. Meat processing units equipped to handle or process more than 500 Kg of meat per day or 150 MT per annum

3. All food processing units other than mentioned under (I) to (IV) including relabellers and repackers having installed capacity more than 2 MT/day except grains, cereals and pulses milling units.

15. Section 26 of the Act.

16. Section 28 of the Act

17. Section 33 of the Act

18. Chapter IX of the Act deals with Offences and Penalties

19. Section 48 of the Act

20. SCHEDULE 1 See Regulation 2.1.2 (3)]

There is procedure also available for Application for Licence/Renewal of licence under Food Safety and Standards Act, 2006 basing on the kind of food processing business[21].

Manufacturing/Processing including sorting, grading etc.

The Government has accorded the sector a high priority and has undertaken several policy measures and initiatives. It has offered a number of fiscal reliefs and incentives as well as approved a large number of joint ventures, foreign collaborations, industrial licences and 100% export oriented units (EOU) proposals in different food processing areas. Some of the important steps in this direction are:- (i) Most of the processed food items have been exempted from the purview of licensing under the Industries (Development & Regulation) Act, 1951, except items reserved for small-scale sector and alcoholic beverages; (ii) Food processing industries are included in the list of priority sector for bank lending in order to ensure easy availability of credit to them; (iii) Automatic approval for foreign equity upto 100% is available for most of the processed food items, excepting alcohol and beer and those reserved for small scale sector (subject to certain conditions); (iv) In budget 2007-08, excise duty has been waived on all kinds of food mixes including instant mixes, Soya Bari (food supplements) and ready to eat packaged goods as well as on biscuits; (v) Customs duty on sunflower oil (crude) reduced from 65% to 50% and on sunflower oil (refined) reduced from 75% to 60%; (vi) Special additional duty of 4% has been waived in the case of refined edible oil; (vii) Custom duty on food processing machinery reduced from 7.5% to 5%; *etc.*

Fruit Products Order (FPO), 1955 - promulgated under Section 3 of the Essential Commodities Act, 1955, it provides for regulation of sanitary and hygienic conditions in manufacture of fruit and vegetable products. It aims to ensure that hygienic and good quality products are manufactured and sold. It is implemented by the Ministry through the Directorate of Fruit and Vegetable Preservation. The Directorate has five regional offices located at Delhi, Mumbai, Kolkata, Chennai and Guwahati as well as a sub-office at Lucknow. The licensing under this order laid down the minimum requirement for the following items, namely:- (i) sanitary and hygienic conditions of premises, surrounding and personnel; (ii) water to be used for processing; (iii) machinery and equipment; and (iv) products specifications. In addition, maximum limits of preservatives, additives and contaminants have also been specified for various products.

To keep pace with recent developments in the technologies and to harmonize the FPO standards with PFA, Codex, EU, FDA and other international food standards, the Ministry has taken the initiative to review the existing FPO, 1955 which aims to suggest amendment in the fruit and vegetable products standards based on the scientific development and modernization of the fruits and vegetables processing industries and the rules governing them.

Meat Food Products Order (MFPO), 1973 - promulgated under Section 3 of the Essential Commodities Act, 1955, it aims to ensure supply of wholesome meat food products to the consumers. It deals with quality control of meat food products from processing to finished product by way of ante-mortem and post-mortem inspection of meat animals so as to ensure hygienic conditions of processing of meat food products. It was earlier implemented by Directorate of Marketing and Inspection (DMI), but its administration has been transferred to the Ministry. The sanitary, hygienic, packing, marking and labelling

21. Form 'B', See Regulation 2.1.2, Regulation 2.1.3 and Regulation 2.1.7

requirements are specified in separate Schedules of the Order.

To keep pace with recent developments in the manufacture of meat food products and to harmonize the MFPO standards with PFA, Codex, EU, FDA and other international food standards, the Ministry has taken the initiative to review the existing MFPO, 1973 which aims to suggest amendment in the meat products standards based on the scientific development and modernization of the meat and meat processing industries and the rules governing them.

But the above Acts were replaced by Food Safety and Standards Act 2006 with effect from August 5, 2011. Food Safety and Standards Act, 2006 is integrated food law aims to achieve a high degree of consumer confidence in the quality and safety of produced, processed, sold or exported food. It seeks to overcome problems like multiplicity of food laws and standard setting and enforcement agencies which creates confusion in the minds of consumers, traders, investors and manufacturers.

The following are the food laws applicable to food and related products in India and the food processing industry has to comply with their legal requirements

Other Food related laws relating to Food Processing:

1. The Standards of Weights and Measures Act, 1976, and Standards of Weights and Measures (Packaged Commodities) Rules, 1977
2. Agriculture Produce (Grading & Marking) Act (Ministry of Rural Development) which lays down the specifications for various agricultural commodities including some processed foods.
3. Export (Quality Control and Inspection) Act, 1963.
4. Environment Protection Act, 1986.
5. Pollution Control (Ministry of Environment and Forests)
6. Industrial Licence under Industries (Development & Regulation) Act, 1951 for liquor manufacture.
7. Bureau of Indian Standards Act, 1986 which is the largest body for formulating standards for various food items.

Government initiatives and duty regime

i. Most of the processed food items have been exempted from the purview of licensing under the Industries (Development & Regulation) Act, 1951, except items reserved for small-scale sector and alcoholic beverages.

ii. Food processing industries are included in the list of priority sector for bank lending in order to ensure easy availability of credit to them.

iii. Most of the items can be freely imported and exported except for items in the negative lists for imports & exports. Capital goods are also freely importable, including second hand ones in the food processing sector.

Processing contaminants are generated during the processing of foods (*e.g.* heating, fermentation). They are absent in the raw materials, and are formed by chemical reactions between natural and/or added food constituents during processing. Examples are: nitrosamines, polycyclic aromatic hydrocarbons (PAH), heterocyclic amines, histamine, acrylamide, furan, benzene, trans fat, monochloropropanediol (MCPD), semicarbazide, 4-hydroxynonenal (4-HNE), and ethyl carbamate.

The best way to combat the food borne problems is to maintain good hygienic conditions around the storage, packing,

processing and marketing places. Precautions should be taken in handling the produce so that there is no damage to the containers and contents remain intact & unexposed to the atmosphere. In case of, agricultural products high sanitary conditions are prerequisite for quality & shelf life. Besides this, sterilization of the packaging material and pasteurization of the product/vacuum packing are other suitable methods to prevent the food from the microbial attack.

Benefits

More and more people live in the cities far away from where food is grown and produced. In many families the adults are working away from home and therefore there is little time for the preparation of food based on fresh ingredients. The food industry offers products that fulfil many different needs: From peeled potatoes that only have to be boiled at home to fully prepared ready meals that can be heated up in the microwave oven within a few minutes.

Microwave oven Benefits of food processing include toxin removal, preservation, easing marketing and distribution tasks, and increasing food consistency. In addition, it increases seasonal availability of many foods, enables transportation of delicate perishable foods across long distances, and makes many kinds of foods safe to eat by de-activating spoilage and pathogenic micro-organisms. Modern supermarkets would not be feasible without modern food processing techniques, long voyages would not be possible, and military campaigns would be significantly more difficult and costly to execute.

Modern food processing also improves the quality of life for allergists, diabetics, and other people who cannot consume some common food elements. Food processing can also add extra nutrients such as vitamins. Processed foods are often less susceptible to early spoilage than fresh foods, and are better suited for long distance transportation from the source to the consumer. Fresh materials, such as fresh produce and raw meats, are more likely to harbour pathogenic micro-organisms (*e.g.* Salmonella) capable of causing serious illnesses.

Drawbacks

In general, fresh food that has not been processed other than by washing and simple kitchen preparation, may be expected to contain a higher proportion of naturally occurring vitamins, fibre and minerals than the equivalent product processed by the food industry. Vitamin C for example is destroyed by heat and therefore canned fruits have a lower content of vitamin C than fresh ones. Processed foods often have a higher ratio of calories to other essential nutrients than unprocessed foods, a phenomenon referred to as "empty calories". Most junk foods are processed, and fit this category. High quality and hygiene standards must be maintained to ensure consumer safety and failures to maintain adequate standards can have serious health consequences. Processing food is a very costly process, thus increasing the prices of foods products. India's food processing sector covers fruit and vegetables; meat and poultry; milk and milk products, alcoholic beverages, fisheries, plantation, grain processing and other consumer product groups like confectionery, chocolates and cocoa products, Soya-based products, mineral water, high protein foods *etc.*

According to official statistics, India exported processed fruits and vegetables worth Rs.5,240 million in 1997-98. The horticulture production is around 102 million tonnes. Foreign investment since 1991, when economic liberalisation started, stood at Rs.8,800 crore. Products that have growing demand, especially in the Middle East countries include pickles, chutneys, fruit pulps, canned fruits, and vegetables, concentrated pulps and juices, dehydrated vegetables and frozen fruits and vegetables.

Another potential processed food product is meat and poultry products. India ranks first in world cattle population, 50 per cent of buffalo population and one-sixth of total goat population of the world. Buffalo meat is surplus in India. There is vast scope to set up modern slaughter facilities and cold store chains in meat and poultry processing sector. India's current level of meat and meat-based exports is around Rs.8,000 million. In last six years foreign investment in this segment stood at Rs.5,000 million which is more than 50 per cent of the total investment made in this sector.

Challenges in Food Processing

Unprocessed foods are susceptible to spoilage by biochemical processes, microbial attack and infestation. The right post harvest practices such as good processing techniques, and proper packaging, transportation and storage (of even processed foods) can play a significant role in reducing spoilage and extending shelf life. The challenges in processing lie in retaining the nutritional value, flavour, aroma, and texture of foods, and presenting them in near natural form with added conveniences. However, such qualities cannot be readily quantified and correlated with physico-chemical parameters, sensory evaluations providing the only means of benchmarking. Besides, processed foods need to be offered to the consumer in hygienic and attractive packaging, and at low incremental costs[22].

Policy Initiatives

After liberalization several policy measures have been taken with regard to regulation and control, export and import, fiscal policy, exchange and interest rate control taxation, export promotion and incentives to high priority industries. Food processing and agro industries have been accorded high priority with a number of important relieves and incentives. Some of the important policy changes towards food processing industry are as follows:

Processing of Food-An Over View

The processing of food can be done in the following circumstances as follows:

I. Fruits and Vegetable Processing

Fruits and vegetables are different from cereals, pulses and oilseeds. Generally they cannot be stored for longer periods and should be used as soon as possible. If stored, they should be kept in a cool, dark place to prevent sprouting, mould growth and rotting. Since they are tender and high in moisture content they are highly perishable. If not handled properly, a high value nutritious product can deteriorate and rot in a matter of days or even hours.

II. Milk Processing

To ensure safe milk free from disease-producing bacteria, toxic substances and foreign flavours, fresh whole milk is to be processed before marketing. The processing helps produce milk that has an initial low bacterial count, good flavour and satisfactory keeping qualities. Milk processing operations consist of clarification, pasteurization and homogenization.

III. Meat processing

Muscles of a slaughtered animal undergo a lot of post-mortem biochemical and biophysical changes (rigor mortis) on storage at chilling temperature of 0 - 4°C without spoilage. These changes convert muscle to meat with increase in tenderness, juiciness and colour besides other sensory characteristics. This is known as ageing or conditioning. Processing of meat refers to processing techniques applied to fresh meat. Meat

22. *Narendra Shah*, CTARA* & *K.V. Venkatesh*, D, "Opportunities for the Food Processing Industry in India" available at http://www.ircc.iitb.ac.in/~webadm/update/archives/Issue1_2004/focus.html (Last visited on May 26, 2012).

processing may include protein extraction, chemical and enzymatic treatments, massaging or tumbling, salting, curing, stuffing, thermal processing, smoking, grinding, mincing, chopping, flaking, dicing, cubing, restructuring and mixing of meat with various additives.

IV. Oil Processing

Processing of oilseeds may vary with raw material however some general steps are common to all.

VI. Tea and Coffee processing:

VII. Spices and Condiments processing

There are about 35 spices and condiments which can be broadly classified into 6 groups, based upon the parts of the plants which they are obtained, namely (i) rhizomes and root spices, (ii) bark spices, (iii) leaf spices, (iv) flower spices, (v) fruit spices, and (vi) seed spices. The important spices and condiments under commercial or large-scale cultivation are cardamom, pepper, chillies, turmeric and ginger.

Sample taken from processing unit-It has been mentioned that the sample has been drawn for the purpose of analysis from the Public Analyst whereas in the complaint, it has been mentioned that the sample was drawn for analysis as well as examination. The examination is for the purpose of violations of Rule 32 of the Prevention of Food Adulteration Rules. The sample was not found to be adulterated and it was declared to be misbranded. The sample was drawn from processing unit and accused who appears to be an illiterate person handed over the same to the Food Inspector for the purpose of analysis. The processing work was still going on and labels were yet to be affixed as admitted by the Food Inspector while appearing as PW1. Since the sample was drawn only for the purpose of analysis and that too from a processing unit, accused cannot be held liable[23].

A CRITICAL STUDY ON DEATH SENTENCE

By

—**KANDLE. MADHAN KUMAR**, L.L.M.
P.G. College of Law, Hyderabad, A.P.
madhan_kandle@yahoo.co.in

Introduction

There has been a long quest of human beings to curb and control deviance and promote conformity to normative behaviour in human culture since times immemorial. Various ways and means have been attempted in this direction. The criminologists, jurists, sociologists and legal professionals have dealt with various aspects of the crime and the penal systems. Death penalty is one of the most debated, ancient forms of punishment in almost every society. Despite countless studies, several researches and plenty of experiments no conclusions have been reached yet, which can be socially, morally and legally accepted. India has also been witnessing this debate. This debate was revived in India when all the 26 defendants in the Rajiv Gandhi assassination case were sentenced to death. Recently, a Court awarded death sentence to Dubai based underworld don *Aftab Ansari* and six others for the attack outside the American Centre that left five policemen dead.

23. *U.T. Chandigarh v. Lachman Dass*, 2009 (1) FAC 287 (P&H).