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SANITARY AND PHYTOSANITARY (SPS) MEASURES IN SAARC COUNTRIES

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CONTENTS

LIST OF ACRONYMS

AAS	Atomic Absorption Sectrophotometer
ADG	Assistant Director General
ADI	Acceptable Daily Intake
ALARA	As Low As Reasonably Achievable
APO	Asian Productivity Organisation
BHT	Butylated Hydroxytolune
BIS	Bureau of Indian Standard
BR	Butyrorefractometer
BSTI	Bangladesh Standard and Testing Institution
BVO	Brominated Vegetable Oil
CAC	Codex Alimentarius Commission
CCFAC	Codex Committee on Food Additives and Contaminants
CCFS	Central Committee for Food Standards
CDO	Chief District Officer
CII	Confederation of Indian Industry
CMC	Colombo Municipality Council
CMOH	Chief Medical Officer of Health
DFTQC	Department of Food Technology and Quality Control
EU	European Union
FAC	Food Advisory Committee
FCB	Food Corporation of Bhutan
FCI	Food Corporation of India
FDA	Food and Drug Administration
FFA	Free Fatty Acid
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
FPO	Fruit Products Order
FSC	Food Standardisation Committee
GAP	Good Agricultural Practices
GATT	General Agreement on Trade and Tariffs
GHP	Good Hygienic Practices
GLC	Gas Liquid Chromatography
GMO	Genetically Modified Organism
GMP	Good Manufacturing Practices
GOB	The Government of Bangladesh
GOP	The Government of Pakistan
GOS	The Government of Sri Lanka
GVP	Good Veterinary Practices
HACCP	Hazard Analysis and Critical Control Point
HPLC	High Performance Liquid Chromatography

HRD	Human Resource Development
IPPC	International Plant Protection Convention
ITC	International Trade Center
JECFA	Joint FAO/WHO Expert Committee on Food Additives and Contaminants
JECFI	The Joint FAO/IAEA/ WHO Expert Committee on Food Irradiation
JMPR	Joint FAO/WHO Meetings on Pesticide Residues
LDCs	Least Developed Countries
MOH	Ministry of Health
MRA	Mutual Recognition of Agreements
MRL	Maximum Residue Limit
OIE	Office of International Epizootics
PFA	Prevention of Food Adulteration
PHD	Public Health Department
PHO	Public Health Official
ppb	Parts Per Billion
PSI	The Pakistan Standard Institute
PTDI	Provisional Tolerable Daily Intake
PTWI	Provisional Tolerable Weekly Intake
RI	Refractive Index
RM	Reichert Meissl
SAARC	South Asian Association for Regional Cooperation
SLSI	Sri Lanka Standard Institute
SPS	Sanitary and Phytosanitary
STCI	State Trading Corporation of India
TA	Technical Assistance
TBHQ	Tertiary Butyl Hydroxy Quinone
TBT	Technical Barriers to Trade
UNCTAD	United Nations Conference on Trade and Development
US	United States
USA	United States of America
UV/IR	Ultra Violate/Infra-Red
VDR	Veterinary Drug Residues
WHO	World Health Organisation
WTO	World Trade Organisation

EXECUTIVE SUMMARY

Sanitary and Phytosanitary (SPS) Measures have caught the attention of traders ever since the inception of the World Trade Organisation (WTO) in 1995. The food trade has entered a new phase of sophistication on issues of the harmonisation of legislative framework and the *modus operandi* of quality management system in the entire food chain. On the face of it, this seems to be easily attainable but when it comes to the real implementation in the developing countries, it sucks in huge resources in terms of meeting stringent criterion laid down by developed countries.

Developing countries have already faced difficulties in meeting criterion set by developed countries and suffered huge losses in their attempt to comply with the stringent rules. International bodies like Codex Alimentarius Commission (CAC), Office of International Epizootics (OIE), and International Plant Protection Convention (IPPC) are actively involved in formulating international standards, guidelines, and recommendations pertaining to the human, animal or plant health or life in international agro-food trade.

The CAC is responsible for developing standards. The developed countries are well represented in all the activities taken place within such international bodies like CAC while members of the developing countries are often missed out owing to their financial and technical constraints. Therefore, it is said that developed countries are standard-setters and developing countries the standard-takers. At the end, the developing countries remain at a disadvantage due to stringent measures set for the standards by the developed countries.

This paper attempts to focus on food safety and quality requirements as embodied in SPS related matters in the South Asia Association for Regional Cooperation (SAARC) in view of strengthening legislative framework along with human and other capacity building, in- laboratory services for enhancing food trade, and safety assurances to the consumers at large.

Chapter one deals with food quality and safety issues in international food trade. It briefly summarises the concept of pro-active dimension of quality management such as Good Agricultural Practices (GAP), Good Veterinary Practices (GVP), Good Manufacturing Practices (GMP) and Good Hygienic Practices (GHP) for the enhancement of quality and safety of food resources.

Chapter two summarises the food legislative framework in the SAARC region. The food legislation, framed nearly four or five decades ago, which heavily relied on the end product testing and penalisation, require thorough revision and updating to bring them in harmony with SPS requirements and to keep with the growing need of the present trade practices.

Chapter three embodies salient features of SPS/Technical Barriers to Trade (TBT) requirements in SAARC countries. The SPS provisions include harmonisation in food control procedures, establishment of equivalence measures, and maintaining transparency in notifications and other procedures and approaches to food quality and safety management. The specific SPS requirement is that the countries are free to adopt any measure that is intended to protect the human, animal or plant health and life, so long as they are science based.

Chapter four emphasises Codex as a benchmark standard for international trade. Codex standards, guidelines and recommendations are the basis for SPS requirements on food products. All aspects concerning the Codex process including Labelling Requirements, Hazard Analysis and Critical Control Points (HACCP), Import/Export Inspection and Codex procedures are elaborated.

Chapter five entails Risk Analysis. It has been considered as an important and valuable tool to judge the health implication at the ingestion of a particular food. While developing food standards, particularly with acceptable level of contaminants, the probability of health risk to consumer is taken as an important criterion in order to make judgement of safe food product and to satisfy the trading partners and/or international standard setting bodies.

Chapter six consists of regional context on the enforcement of SPS-related matters. As the food regulations and standards of SAARC countries are not updated barring India, there is still a long way to go to achieve harmonisation with Codex. The present structure of food control administration needs upgrading and revamping. The comparative standards for colours, preservatives, antioxidants and food labelling show wide variations and do not comply with Codex requirements. The SAARC standards for edible fats and oils are compared to indicate how divergent and varied are regional standards as a case study.

Chapter seven stresses on the special needs of the SAARC countries from SPS implementation perspectives. The SAARC countries need technical assistance to develop their human resources, infrastructure and to update food legislation to comply with SPS requirements.

Chapter eight deals with major issues and constraints of SAARC in terms of human resources and infrastructure including the food legislation.

Chapter nine focuses on important agenda for the SAARC initiatives and undertaking. The SAARC should expedite the process of regional harmonisation, strengthening of infrastructure and developing Referral Laboratories for competent services and accreditation.

CHAPTER - I

BACKGROUND

Globalisation has accelerated impetus for monitoring of food safety in the entire food chain

Food safety is an emerging frontline yardstick in the realm of food trade. The globalisation and economic liberalisation have placed certain obligations to enhance capacity building in the area of quality assurance. The food chain is considerably longer in developing world where infrastructure are poorly developed. Hence, a close look at the journey of food products is imperative to understand the management of food quality. The food is produced at the farmland where various inputs such as seeds, fertilisers, and pesticides are used to enhance production and productivity. All these inputs need to be judiciously used to produce safe food. The food products should be safely handled, transported and stored not to cause any deleterious effect to the consumers. The worldwide concern is that the food should meet the dietary requirement of the people without causing any health effect.

A Sanitary and Phytosanitary (SPS) measure has become the stumbling block to the smooth trading of foods. In other words, it is a non-tariff barrier slapped on the exporting country that does not meet the safety measures employed by the importing country. The countries are at various stages of development and it will be quite erroneous to assume that all countries can adopt identical measures to ensure similar quality management system at a time. However, the World Trade Organisation (WTO) has implemented SPS measures for the convenience of all the member countries to strengthen their capacity building in this endeavour. Though it looks simple and precise, it takes a long route to get into execution.

The economic situation of the countries and social behaviour and taboos altogether contribute a lot to the strengthening of quality management schemes in the countries. The volume of trade in general and the export trade volume determine the priority accorded to this sector in the developing world. It is true that those countries that have increased volume of export trade have also strengthened their quality management system.

1.1 Food episode

The developed countries have built up and operationalised effective epidemiological surveillance systems to assess the occurrences of food and water related diseases whereas in the SAARC countries such systems are not easily available

The recent estimate indicates that the food and water born-disease ranks second only to respiratory tract disease on global basis, claiming some 10,000 lives per day amongst children under five years in Africa, Asia and Latin America. In the USA alone, the food-related hazard is responsible for an annual death of 9000 people and the illness of about 33 million people. The medical cost amounts to 6.5 billion US dollar, and the productivity losses escalate as high as 35 billion US dollar respectively. The seven Pathogens: *E. Coli* 0157: H7, *Listeria monocytogens*, *Salmonella*, *Staphylococcus aureus*, *Taxoplasma*, *Campylobacter jejuni*, and *Clostridium perfringens* etc, are the causative agents for such disaster. The developed countries have built up and operationalised effective epidemiological surveillance system. In this system, the occurrences of food and water related diseases are collected, assessed and released for public awareness. In the SAARC countries such data and relevant information are however not easily available and therefore analysed for policy intervention due to lack of epidemiological surveillance system.

Those food products are categorised into high-risk group, which are generally undercooked such as: poultry, eggs and meat, raw milk and their products, and cooked food contaminated by raw foods. In addition

to this, the foods that are not stored in safe storage temperature, and those that have expired minimum durability of usage, fall under high-risk food group.

1.2 Perception on food safety

The perception of consumers in recognising food safety as an absolute measure to protect their health does not represent the true picture of the situation. There is a wide gap between actual risk and perceived risk in the decision making for food safety. The food safety risks rating as assessed and as perceived by consumers vary a lot depending upon the level of knowledge and the availability of information. Microbiological risks often receive the lowest risk rating in many countries of the world.

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The food supply chain should be understood globally and the intricate relationships of the farming community with market forces and industries may eventually determine the quality and safety assurances of the foods. The course of food trade is determined by the country's agro-food potential and its extent of commercialisation. The countries are inter-linked in terms of food transaction and, therefore, contaminants detected in food consignments have greater chances of spreading to other parts of world within the lapse of a few days time.

1.3 The value of international food trade

The value of international food trade has reached the amount of US$ 458 billion per year. Europe's share is nearly 50 percent of all food imports and 45 percent of all food exports. Asia is also a significant contributor to the international trade with 22 percent of food import and 18 percent of food exports. The food trade has grown by 3.5 percent in developing countries while European Union (EU) and North America have shown increases by 4.3 and 2.4 percent respectively.

1.4 Good practices

Implementing food quality assurance activity requires adoption of good practices in crop and animal production such as: Good Agricultural Practices (GAP), and Good Veterinary Practices (GVP). These good practices ensure the safety of food to the consumers. They also promote trade without having any risk to rejection of consignment. The good practices include planting the certified best quality seed of appropriate varieties, using certified and authorised chemical inputs (fertilisers, pesticides) in accordance with approved dosage (concentration, frequency, timing of use), employing appropriate harvesting and on-farm storing, handling measures and using the right kind of shipping to market food products.

Implementing food quality assurance activity requires adoption of good practices in crop and animal production such as: Good Agricultural Practices (GAP), and Good Veterinary Practices (GVP)

In case of GVP, all measures are taken to ensure that the meat from animal confirms the acceptable limits of quality and safety. Some important GVP measures are: i) only healthy animals are slaughtered; ii) all precautions are taken to ensure that veterinary drug residues do not remain in edible tissues at unsafe level and do not pose any threat to the health of the consumers; iii) all good practices are implemented in the handling of meat and meat products and iv) temperature control during storage and transportation. GAP and GVP are properly implemented on foods to enhance safety of the products as well as to prevent contamination from filth, toxic chemicals and other contaminating agents.

The quality and safety of food can be ensured by applying Good Manufacturing Practices (GMP), and Good Hygienic Practices (GHP) to

food processing. Some important elements of GHP are: i) adequate cleaning and sanitising measures at all stages of processing; ii) implementing sanitary practices; and iii) use of time and temperature control to inhibit microbial growth in processed foods.

GMP includes: i) use of food materials and ingredients including additives at the approved level intended to prevent and control contamination, ii) proper cleaning and sanitation of processing facilities so that undesirable microbes and other contaminants do not take place, and iii) the control of temperature, time, pressure, machines operations and other processing parameters at the specified level to ensure proper processing.

In view of multitude of hazards that can arise from farming to processing and finally at the consumption stage, one approach which is gaining prominence is the application of the HACCP system

In view of multitude of hazards that can arise from farming to processing and finally at the consumption stage, one approach which is gaining prominence these days is the application of the Hazard Analysis and Critical Control Point (HACCP) system. HACCP helps to identify all the potential hazards in the food chain. After identifying these hazards, critical control points in processing are identified and control measures applied to prevent or reduce or eliminate these hazards.

1.5 Non-tariff measures

Non-tariff measures are increasingly used in agro-food products throughout developed countries (Table 1). Technical standards are the causal factors for non-tariff barriers, which show increasing trend along with the decline in quantitative restrictions. Non-compliance with SPS measures account for this kind of syndrome.

Table 1. Non-tariff barriers on agricultural products in developed countries, 1994

Country	Total number of non-tariff measures
Canada	1,464
Sweden	709
Australia	418
France	394
Norway	393
New Zealand	323
Finland	302
USA	300
Austria	254
Italy	109
Belgium / Luxembourg	93
Greece	55
Denmark	32
Germany	24
United Kingdom	14
Ireland	3

Source: Henson, S. et. al, 2000.

1.6 Stringent standards

Imposition of stringent food standard by developed countries has prevented imports from developing countries

Table 2 below shows maximum level of aflatoxins in spices allowed in developed countries. Most of the spices growing countries are tropical where temperature and humidity conditions make the spices vulnerable to the attack of fungus *Aspergillus flavus* producing metabolite as aflatoxin. Rational for fixing zero level of aflatoxin in Belgium, 1 ppb (µg/kg) in Switzerland, 4 ppb in Germany and Denmark are stringent limit, which needs to be rectified by risk assessment to promote the export of developing countries.

Table 2. Maximum level for aflatoxin in spices in various developed countries.

Country	Permitted level (ppb)*	Products	Comments
Austria	B^1 < 1	All	
Belgium	Total = 0	All	May not be present
Germany	Total < 4	All	
Denmark	Total < 4	All	
Netherland	B^1 <5	All	
Switzerland	B^1 <1 $B_2 + G_1 + G_2$ <5	All	
United kingdom	Total <50	Chilli	Advisory land
Spain	B^1 <5		
Sweden	Total <5	All	
Finland	Total <5	All	
Italy	B^1 <10	All	
France	B^1 <10	All	
USA	Total <20	All	

* ppb = µg/kg

Source: Henson, S. et. al (2000)

1.7 Incidence of contravention and detention in food trade

The US Food and Drug Administration (FDA) is the only agency, which makes such data public through monthly detentions' list. Table 3 shows the characteristics of detentions in terms of contravention and geographical region. It reveals that the major causes of detention are filth contamination, rodents' excreta and hairs, followed by microbiological contamination, low acid canned foods, and food labelling etc. It is clear that more than 50 percent of the rejections are attributable to the lack of basic food hygiene and the failure to comply with labelling requirements.

Glimpse of major defects causing detention and rejection of food consignment was mainly comprised of filth contamination, microbiological contamination and incorrect food labelling in international trade

Table 3 shows number of contravention for US FDA import detentions. Food consignments were detained in various products irrespective of geographical regions. African products were detained on the ground of non-compliance with microbiological contamination (41.3%), followed by filth (17.8%) and incorrect labelling (12.5%). Food products from Latin America and the Caribbean were detained mainly due to filth contamination (32.2%), followed by pesticide residue (21.1%), mould (12%) and heavy metal (10.9%). The violation of labelling requirements is the lowest in the region as compared to other regions. The European food products did violate the provision of low acid canned foods (35.9%) followed by incorrect labelling (20%) and microbiological contamination (13.4%).

The Asian food consignments are detained because of violation on filth contamination (35.2%), followed by microbiological contamination (15.5%), low acid canned foods (14.3%) and decomposition (11.5%).

Table 3. Number of contraventions

Reason for contravention	Africa	Latin America and the Caribbean	Europe	Asia	Total
Food additives	2 (0.7%)	57 (1.5%)	69 (5.8%)	426 (7.4%)	554 (5.0%)
Pesticide residues	0 (0.0%)	821 (21.1%)	20 (1.7%)	23 (0.4%)	864 (7.7%)
Heavy metals	1 (0.3%)	426 (10.9%)	26 (1.7%)	84 (1.5%)	537 (5.1%)
Mould	19 (6.3%)	475 (12.2%)	27 (2.2%)	84 (1.5%)	537 (5.1%)
Microbiological contamination	125 (41.3%)	246 (10.9%)	159 (13.4%)	895 (15.5%)	1,425 (12.8%)
Decomposition	9 (3.0%)	206 (5.3%)	7 (0.6%)	668 (11.5%)	890 (8.0%)
Filth	54 (17.8%)	1,253 (32.2%)	175 (14.8%)	2,037 (35.2%)	3,519 (31.5%)
Low acid canned foods	4 (17,8%)	142 (3.6%)	425 (35.9%)	829 (14.3%)	1,400 (12.5%)
Incorrect labelling	38 (12.5%)	201 (5.2%)	237 (20.0%)	622 (10.8%)	1.098 (9,8%)
Other	51 (16.8%)	68 (1.7%)	39 (3.3%)	151 (2.6%)	309 (2.8%)
Total	303 (100%)	3,895 (100%)	1,184 (100%)	5,784 (100%)	11,166 (100%)

Source: US FDA (1996/97).

Table 4 shows the number of detentions and destruction of food consignments. In 1997, there were as many as 4,795 detentions of which 32 percent were due to filth or insect, rodent and birds' filth. The causes for other detentions were low-acid canned foods (12.5%) followed by microbiological contamination (11%) and incorrect labelling (10%). In 1998, the estimated economic loss or costs was around 750 million US dollar.

Food control agencies of food importing countries maintain risk lists of exporting countries depending upon their reputation and compliance with the mandatory import requirement and certification credibility

The importing countries judge the merit and integrity of exporting countries by the consistency of acceptable product quality and the authenticity of certifications in line of its compliance with the mandatory import quality requirements. Food control agencies of food importing countries maintain risk lists of exporting countries depending upon their reputation and compliance with the mandatory import requirement and certification credibility. Products from listed countries are sometimes automatically detained or strictly scrutinised with accompanying costs. These countries, which have good reputation, may experience smooth entry at minimum costs.

Table 4. Detention, rejection and destruction of food consignments

Year	No. of detentions	Percentage (%)	Reasons
1997	1,534	32	Insect and rodent and birds filth
	599	12.5	Low acid canned foods
	527	11	Microbiological contamination
	480	10	Incorrect labelling
	360	7.5	Decomposition
	336	7	Pesticide residues
	336	7	Food additives
	288	6	Mould contamination
	192	4	Heavy metals
	143	3	Instated reasons
Total	4,795	100	

Table 4.2. Microbiological contamination

Year	Food items	Percentage (%)
1996	Sea food	20
	Cheese	46
	Spices	73
1998	Sea food	57
	Cheese	96
	Spices	85

NB: Only about 5% of all shipments to the US are examined.

1.8 Economic losses vis-à-vis non-compliance with standard

Imposition of HACCP measure by the EU had caused huge economic losses in the export of shrimp from Bangladesh

Cato and Lima (1998) made comprehensive study of the impact of EU ban on export of shrimp from Bangladesh. It has been estimated that Bangladesh had to bear an economic loss of about US$ 65.1 million as a result of EU ban. However some processing plants diverted their shipment to Japan and USA, and therefore, were able to bring down the losses. Despite the effort, the estimated net loss was equivalent to about US$ 14.7 million.

The Government of Bangladesh (GOB) and the shrimp entrepreneurs made substantial investment to ensure the operation of HACCP system. Cato and Lima (1998) estimated that the cost of investment for upgrading equipment and training of staff and workers for achieving hygienic and sanitary measures was about US$ 18 million. Additionally, the annual maintenance cost of HACCP was about US$ 2.4 million. The shrimp industry of Bangladesh has not yet recovered from the setback of 1997. The shrimp export before EU ban amounted to US$ 128.9 million, which plunged to US$ 48 million in 1998, with slow recovery to US$ 124.9 million in 2000.

Sri Lanka faces SPS related quality problems

Anura Herath (2001) reports that the Sri Lankan spices face SPS related quality problems in terms of the presence of mould, high moisture level and aflatoxin. The quality related problems are mainly due to cultural practices and technological limitations. Herath (2001) further reports that the estimated average volume loss was about 5,500 Mt during 1999-2000 and the estimated value of foreign exchange loss due to non-compliance was US$ 2.9 million per year. The net loss of employment was 2,400 persons every year as a consequence of the loss of export volume. Further, it was indicated that the cost of compliance with quality requirement in terms of providing training to 70,000 traders was US$ 1.954 million.

Issues for comments

- How can the epidemiological surveillance system be linked with food contaminants and spoilage?
- How far the consumer awareness activities have addressed the food safety aspects?
- To what extent the food quality and management systems are oriented to implement good practices in agribusiness?
- What are the major impacts of stringent food standards on the economic issues of food trade?
- What role the civil society has played in creating mass awareness about the food safety?

CHAPTER - II

GENERAL OVERVIEW OF FOOD SAFETY FRAMEWORK IN SAARC COUNTRIES

Existing food regulations and food safety procedures are unable to cope with the emerging scenario of WTO's SPS requirements

The food safety procedures are implemented in various forms in SAARC countries. Most of the countries of the region have federal and provincial or state and district level implementation units. The organisational aspect of the food safety measures is not well structured to cope with the growing demand of sophistication in managing risks of foods.

India has a federal as well as state level structure for food safety. Both Bangladesh and Pakistan have weak federal structure with emphasis on provincial level of food safety programme. Sri Lanka has also limited central structure. Bhutan and Maldives have not yet enacted food legislation. Nepal has a central level operational structure with five regional units to implement food safety programmes.

Box: 2.1

Diverse food legislative framework

Food legislation were formulated over a period of four to five decades in the SAARC region. The overall thrust of these legislation are primarily based on end product testing and heavily rely on penalisation to the cases of food safety violations. After the emergence of the WTO, the existing legislative measures implemented in SAARC countries do not suffice to meet the requirements of quality and safety in the food trade. It is, therefore, vitally essential to revamp food laws and regulations taking cognisance of proactive and preventive quality management schemes such as: GMP and HACCP.

2.1 Bangladesh

The Pure Food Ordinance 1959 and the Pure Food Rules is the basic framework of food legislation in Bangladesh. The food safety activities are carried out in the governmental level by Public Health Department of the Ministry of Health, City Corporations of the Ministry of Local Government and Rural Development and Bangladesh Standard and Testing Institution (BSTI) of the Ministry of Industries.

The Pure Food Ordinance 1959 and Pure Food Rules need urgently updating

The Public Health Department is the responsible implementing authority so far as the execution of Pure Food Ordinance at District and Thana level is concerned. The sanitary inspectors are the key players in the implementation of Food Ordinance at the lowermost operation unit such as Thana. The Thana level Public Health Unit comprises of medical officer, medical assistants, sanitary inspectors, health inspectors and assistant health inspectors. These are the human resources for disseminating food safety messages to the grass-root level for improving safety of their foods by enhancing improved post harvest handling practices.

The City Corporations implement Food Ordinances and Rules in their respective areas. The City Corporation has health officers, public analysts, chemist, assistant chemist, and inspectors to carry out food safety activities in areas under their command. Each City Corporation has a food-testing laboratory. The inspectors can enter into any

premises for inspection purposes and take samples for further investigations. The main task of food inspectorate is to check adulteration and promote food hygiene and sanitation.

BSTI is the Codex contact point for Bangladesh. About 52 food commodities are included in BSTI's mandatory certification scheme

BSTI is the Codex contact point for Bangladesh. About 52 food commodities are included in mandatory certification scheme of BSTI. Those food industries or food establishments that violate these conditions shall be punished as per BSTI regulations.

The Directorate of Inspection, Development and Technical Services under the Department of Food is responsible for inspection and quality control of food grains and foodstuffs that are either imported or domestically produced. The Department of Food has its own laboratory for the general analysis of food grains and foods and for the analysis of other contaminants such as insecticides, or harmful substance. The food samples are sent to Public Health Laboratory and BSTI laboratories for the analysis, chemical and biological tests.

The current Pure Food Ordinance 1959 is the continued version of former East Pakistan Pure Food Ordinance 1959. The revised version of Food Safety Ordinance 1994 is still awaiting parliamentary approval.

2.2 Bhutan

Bhutan does not have any food legislation, though some other legislation exist to deal partly with food safety problems. The Department of Animal Husbandry under the Ministry of Agriculture is responsible for the production of milk, cheese, butter, eggs, chicken, beef, mutton, pork, and fish. Chicken and fish are, however, imported from India. The Royal Government of Bhutan has enacted "The Livestock Act" in 1980. There are about eight bylaws of which the bylaw No. 5 and No. 6 deal with slaughter and meat inspection, and community inspection respectively.

As there exists no food law or regulations in Bhutan, all imported products mostly from India are relied on the exporting country's food quality control

The Veterinary Laboratory carries out the surveillance of animal diseases in Bhutan. The referral institute for this laboratory is the Indian Veterinary Research Institute. The Veterinary Laboratory has well equipped facilities for microbiological analysis such as total plate count, *E. Coli, Staphylococcus, Salmonella,* and *Shigella* etc.

As there exists no food law or regulations in the country, all imported products mostly from India are relied on the exporting country's food quality control. Food Corporation of Bhutan (FCB) imports essential commodities such as rice, sugar, wheat, and edible oils from Food Corporation of India (FCI), and salt from State Trading Corporation of India (STCI). It is expected that these imported products meet the prescribed Indian Standards. The FCB has established a small laboratory for monitoring of iodine in salt and moisture content, foreign matter, and damaged grains for imported cereals.

2.3 India

As there are many laws and regulations regarding food products in India, their coherence and harmonisation needs to be rectified to avoid ambiguity

In India, the food control system has federal and state level structure. Prevention of Food Adulteration (PFA) Act 1954 is the basic food legislation. It falls within the jurisdiction of central government to make rules and initiate subsequent amendments. Central Committee for Food Standards (CCFS) is the overarching organisation for standardisation and an advisory body to all the matters related to the developing of standards for food and implementation of food regulations.

There are several other regulations such as Agriculture Produce (Grading and Marketing Act), BIS (Certification Marks) Act, Fruit Products Order (FPO), Export (Quality Control and Inspection) Act,

Solvent extracted Oil, de-oiled meal and edible flour (Control Order), Meat Products Order, Chilled, Frozen Meat etc. These Acts are meant for production, distribution, storage and marketing of special commodities. Most of these Acts, Regulations, and Orders focus on the improvement of quality of agro-food products, enhancement of consumers' assurance, and promotion of trade.

The implementation of basic food law, which is very much relevant to SPS agreements, is considered here as a reference to highlight the food safety procedures. The PFA 1954 is the major legal framework for the implementation of food safety measures in India. This Act is quite comprehensive and covers broad array of foods. PFA is one of the most active and dynamic food legislation in the SAARC region owing to its frequency of amendments, coverage of food standards, inclusion of food additives and contaminants. The PFA has been amended three times (in 1964, 1976, and 1986 respectively) to fill the gaps and oversights in the Act and to make more severe punishing provisions.

PFA is one of the most active and dynamic food legislation in South Asia due to its frequency of amendments, coverage of food standards, inclusion of food additives and contaminants

CCFS established at the centre under the PFA, is very active in the process of commodity and product standard formulation as well as to fix limits for food contaminants such as pesticides residues, mycotoxins, heavy metals etc. and food additives (colour, preservatives, antioxidants, emulsifiers, stabilisers etc). The Committee has a broad-based representation from various ministries, food scientists, food quality control and standardisation experts, including representatives from trade and consumer sectors.

The PFA is implemented by the states and the union territories through inspectors and public analysts. The food inspectors operate at the market, industry, and during transportation and distribution of foods at the state level. The inspectors are authorised to take samples from the moving van, market place, industries, warehouses, and can stop or seize the food under questions. The food inspectors make inspections and take samples in accordance with the food regulations and submit it for analysis. The public analysts analyse samples and submit their findings and report. The industries/producers can appeal against such report and can request for re-examination of food samples. Upon such appeals, samples are analysed at Central Food Laboratory, which is also an appellate laboratory. The cases are filed before the Magistrate on the food samples that do not comply with the set standard as per PFA. The cases are settled by Magistrate and decided for forfeiture or destruction of the food items or its disposal. The penalty for violating PFA varies from a fine of Rs 5,000 to a maximum of lifetime imprisonment.

2.3 Maldives

Food laws are not yet enacted in the Maldives. However, Consumer Protection Act 1996 has been enacted in the island nation. The Clause 12 of the Act specifically lays down provisions for labelling such as name of the product, ingredients, weight/quantity, production date, information on the use of products, use before expiry date etc.

Although Consumer Protection Act is the legal framework, the monitoring of imported food products is not routinely conducted in Maldives

Public Health Department (PHD) under the Ministry of Health carries out quality monitoring and inspection activities. The PHD further issues certificate or license for the sale of locally manufactured foods. It monitors foods prepared in restaurants, catering and processing plants. The frequency of inspection is quite high in Male and low in other parts of the country.

Public Health Officials (PHO) examine and inspect bakeries, cafeterias, and restaurants from hygiene point of view. If the hygienic conditions are less than satisfactory in the establishments, the PHO may order closure of those facilities.

Fishing is the major source of food production in the country. The largest fish and marine products manufacturing plant meet the quality requirements of the EU. The EU makes periodic visits to the plant and ensures the implementation of the set standard.

2.4 Pakistan

Pure Food Ordinance 1960 and Pure Food Rules 1965 form the legislative framework of food safety in Pakistan. The rules give authority to provincial governments to appoint public analysts for the investigation of quality and safety of food. There is no federal structure of food safety programme in Pakistan

Pure Food Ordinance 1960 and Pure Food Rules 1965 require revamping to cope with SPS requirements

The Pure Food Rules are enforced through health service delivery channels of the provincial government. The District Health Officer and Deputy Health Officer function as food inspector for sampling and inspection. On the other hand, the Municipality Corporation may also appoint food inspectors and sanitary inspectors for sampling purposes. Any other public servant can also be appointed as inspector and can execute the power of food inspector.

The Pakistan Standard Institute (PSI) with its Food and Agriculture Division develops standard for foods and food products. The PSI standards are voluntary standards and they indirectly complement the implementation of Pure Food Ordinance, which is mandatory regulatory framework for the entire country. Common food products like edible oils, biscuits, grapes, and bananas are enforced through Pure Food Ordinance 1960. Standards for other food products such as *vanaspati ghee*, cotton seed oil cake, poultry feed, coconut oil, palm oil, refined sunflower oil, refined maize (corn) oil, mustard oil, sesame oil, coconut oil (expelled), cotton seed oil, refined soybean oil, biscuits, margarine and cooking oils are also enforced through Pure Food Ordinances. Federal Ministry of Health monitors the quality on import and export of food products. The Agriculture Produce (Grading and Marking) Act 1937 is implemented by the Ministry of Agriculture. Some food products like marine products, oil cake, dry whole chillies, onions, potatoes, citrus fruits, mangoes and eggs are under mandatory certification scheme of national grade standard system.

2.5 Nepal

The Food Act 1966 and Food Rules 1970 need to be revised as soon as possible to functionalise it effectively

The Food Act 1966 and Food Regulation 1970 are the basic legislative frameworks for ensuring safe food supplies to the consumers. The major food control infrastructure is composed of inspectorate, laboratory facilities and enforcement mechanism.

The Food Act 1966 and Food Rules 1970 give a clear mandate to ensure safety and quality of food to the consumer. The basic element of the Food Act 1966 takes account of:

- defining food and adulterated foods.
- ban on production, sale, distribution of substandard, adulterated, and hazardous foods.
- misbranding or sale by false statements.
- detention of food products.
- provision for licensing.
- provision for penalty.
- provision of power to lay down standards and quality of food.
- analysis of food in the specified laboratory.
- food standardisation committee consisting of nine members.
- HMG as plaintiff.
- authority to deal with offences.
- appeal.
- power to make rules.

The District Attorney Officers and Chief District Officers are responsible for administering food legislation in Nepal

The Department of Food Technology and Quality Control (DFTQC) is the focal agency responsible for conducting inspections of industries, import/ export and market. The DFTQC with its five Regional Food Laboratories are assigned tasks to conduct inspections and laboratory investigations in their respective areas. The District Attorney Officers and Chief District Officers are responsible for administering food legislation in the country.

Food Inspectors carry out inspections of food processing industries, customs points, warehouses, markets, (wholesale/ retail) and collect suspicious samples in duplicate. One part of the sample is sent to the public analysts and the other part to the Chief District Officer (CDO) for further verification if needs be. Public Analysts send the report to the concerned Food Inspector. In case the report does not comply with the set standard, the food inspector files a case against the owner of the sample in the office of CDO. If the concerned party is not satisfied with the decision, he may request the Director General of DFTQC through the CDO for re-analysis.

The Food Standardisation Committee (FSC) is responsible body to recommend appropriate standards and to advise His Majesty's Government (HMG), Ministry of Agriculture and Co-operatives, on all matters relating to food standards and food regulations. The FSC is chaired by the secretary, Ministry of Agriculture and Co-operatives, with representatives from Ministry of Law and Justice, Ministry of Industry, Commerce and Supplies, Ministry of Home, Representatives of Kathmandu Municipal Corporation, Food Industry, Federation of Nepalese Chambers of Commerce and Industry (FNCCI), Consumers, and the Director General of DFTQC as the Member Secretary.

Nepal Quality Standard (Quality Mark) Act 1980 was implemented to fix the quality standards for Nepal Council of Standards under the Act, which has been empowered to make standards and regulations for ensuring quality marks. While food standard under the Food Act 1966 is mandatory, Nepal Standards under the Nepal Quality Standard Act is voluntary in nature and, this operates as a third party certifying authority for the quality assurance of the food products.

2.6 Sri Lanka

The Food Act 1980 embodies many important elements of quality. However, it needs updating to harmonise with SPS

The current Food Act of 1980, which was amended in 1991, contains elements such as manufacture, sale, distribution, and import, and seizure of food. It also lays down standards for natural or added substances, which may pose potential health risks.

The food control infrastructure is comprised of high level Food Advisory Committee (FAC) at the apex level that also functions as an advisory body to the Ministry of Health (MoH) on all issues relating to food safety. The Central Administration operates in the Ministry of Health with the Food and Drug Administration. The import and export inspection is carried out by the food and drug Inspectorate of the MoH in close co-ordination with customs authorities. Sri Lanka Standard Institute (SLSI) controls imports of some food items such as canned fish, condensed milk, fruit squashes, fruit syrup, and fruit cordials, synthetic/artificial cordials, fruit concentrates, ready to serve fruit drinks, brown sugar, soybean oil, peanut oil, sunflower seed oil, palm oil, and coconut oil.

The FAC is composed of Director General of Health Services (Chairman), Government Analyst, Colombo Municipality Council (CMC), the Analyst, Principal Collection Customs, Chief Medical Officer of Health (CMOH), representatives from the Ministries of Food, Trade, Local Government, and SLSI, Nutritionist from Medical Research Institute, one Food Technologist, two Food Science Experts (including

Bacteriologist), representatives from Commerce and Industry sectors, Consumer Representatives with the Chief of Food and Drug Inspector as the Member Secretary. FAC meets regularly on a monthly basis. It has three sub-committees: technical sub-committees for standards and regulations, national codex committee, and the co-ordination committee.

Food Advisory Committee (FAC) in Sri Lanka has three sub-committees: technical sub-committees for standards and regulations, national codex committee, and the co-ordination committee

CMC enforces food regulations through its Inspectorate and Laboratory infrastructures. All restaurants and bakeries should obtain license from CMC, and they are expected to comply with hygienic codes as provisioned in the Food Act. The Chief Veterinary Surgeon controls the slaughter of animal and carries out meat inspection.

There are three Food Analytical Laboratories- Government Analytical Laboratory, Colombo; City Analysts Food Laboratory; and Kalutura City Analysts, Kandy. The Government Analytical Laboratory is one of the oldest laboratories, which is moderately facilitated. However, it lacks facilities for monitoring of pesticide residues, mycotoxin and heavy metals.

The import and export inspections are separately carried out by MoH, and the SLSI Inspectorate. The SLSI has revised their import inspection system in 1995, which made provision to recognise certificates from accredited overseas laboratories. However, there is a need for greater co-ordination between inspectorates of MoH and SLSI to avoid unnecessary duplication and wastage of resources.

Issues for comments

- The current food legislation in SAARC are unable to meet the requirements of trade as well as growing expectations of the people.
- Food regulations are too divergent within the region. Harmonisation of these regulation with codex principle, standard, guidelines and recommendations is a felt need.
- What role the Regional Network of Food Control Agencies can play in expediting the process of harmonisation and regional position in international fora?
- Capacity building of food control agency is the prime concern to activate the process of ensuring safe supplies of food to the consumers.

CHAPTER – III

SALIENT FEATURES OF SPS/TBT REQUIREMENT IN SAARC

The genesis of SPS and TBT requirements after the inception of WTO in 1995 exerts worldwide influence on the safety consideration of food trade

The General Agreement on Trade and Tariffs (GATT) was established in 1948 to smoothen uninterrupted trade and to address any other trade related issues on international trade including food and agricultural products. The GATT rules provisioned countries to enforce measures that are considered necessary to protect human, animal or plant life or health without any discrimination between countries and without any disguised restriction on trade. The agreement on TBT (Standard Code) was negotiated in the GATT's Tokyo Round of multilateral trade negotiations (1978-79). It covered technical requirements for food safety and animal and plant health measures. The standard was further rewritten in the GATT's Uruguay Round of multilateral trade negotiations (1986-94). A separate agreement covering SPS measures was negotiated during the same period. Both the TBT and SPS measure came into force along with the establishment of WTO in 1995, which eventually superseded GATT as the apex inter-governmental organisation for international trade. Currently, 144 countries are Members of the WTO.

3.1 The SPS Agreement

On one hand, the SPS Agreement guarantees the right of WTO Members to take actions or impose ban on matters related to protecting human, animal or plant life in international trade. On the other hand, care has been taken not to hinder trade by executing unnecessary health and safety regulations in view of protecting domestic producers from trade competition. The SPS measures should not be used as non-tariff barrier and should be based on scientific evidence in terms of protecting human, animal and plant life or health.

The SPS Agreement advocates the use of science in decision making process relating to protecting human, animal and plant life or health

Members are encouraged to implement their measures based on internationally developed and acceptable standards for ensuring scientific reasoning and promoting harmonisation of SPS measures. The SPS Agreement, therefore, recognises the international standards, guidelines, and recommendations by three inter-governmental organisations: the FAO/WHO Codex Alimentarius Commission (CAC), the Office International des Epizootics (OIE) and the FAO International Plant Protection Convention (IPPC). Activities of these international organisations are very much relevant and in compliance with SPS Agreement.

Governments may impose level of protection higher than the existing international standards provided such measures are based on risk assessment. This applies to the revision of existing standards as well as to those products where relevant standards do not exist. However, Members have to justify their reasoning for why the international standards do not achieve the level of protection and make the risk assessment available to other Members.

Box: 3.1

Compliance with SPS/TBT requirements: An uphill task for LDCs

The SPS and TBT are the basic stumbling blocks for LDCs in terms of unhindered food trade between WTO Member countries. There is some leverage for LDCs to get prepared for the full implementation of SPS measures. The food control infrastructure in LDCs should first be strengthened along with the process of harmonisation of food laws and regulations as per Codex principles, guidelines and recommendations. Good practices in food production, manufacturing, transporting, storing and handling should be embodied in food legislation and implemented to enhance quality and safety of food and food products.

Risk assessment requires to be based on contemporary scientific evidence, and when relevant scientific evidence is not adequate, members may adopt temporary measures taking account of available pertinent information. Governments have a right to determine the level of protection, which they consider appropriate, and are in consistence with the required level of protection. Arbitrary or unjustified differences in levels of protection resulting into discrimination or restriction on trade should be deliberately avoided. Governments should take utmost consideration of choosing least trade restrictive measures.

When an exporting country can verify that its measures achieve the level of protection sought by the importing country, then the importing country should accept the exporting country's measures equivalent. Members cannot avoid consultation relating to the issues of equivalence.

In order to promote transparencies, countries need to identify national notification authorities and enquiry points

The SPS Agreement recognises the prevalence of diseases or pests, or food safety conditions depending upon the climate, and therefore, the SPS regulations should address the local situations. However, SPS measures allow members to recognise disease-free areas for entire country, part of country or all or parts of several countries.

In order to promote the process of transparency, Member countries have to publish their SPS regulations and the WTO Member must identify a national notification authority and an enquiry point. The enquiry points of each country are responsible for submitting notifications and full texts of SPS regulations to interested members.

Any new or revised measures irrespective of international standards, which may affect trade, have to be notified to WTO at the draft stage except in emergency condition. Members are also required to extend technical assistance to other Member countries for facilitation of trade.

3.2 The TBT Agreement

TBT regulations basically entail technical standards, labelling requirements and conformity assessment procedure

The TBT Agreement includes technical regulation standards, and conformity of assessment procedures. Technical regulations are mandatory requirements of governments, which are meant to fulfil certain legitimate objectives. The legitimate objectives are intended to prevent deceptive practices, protect human and animal health as well as to protect the environment. Standards may also be voluntary documents developed for common use with similar objectives. Conformity assessment procedures are those procedures, which are used to ensure that the requirements for technical regulations or standards are met by inspection, testing and certification system. The TBT Agreement embodies code of Good Practices for production,

manufacturing, handling, distribution etc. in terms of applying it in the entire food chain and developing standard by a Standardising Body (governmental or non-governmental).

TBT recognises the responsibility and the government's right to take measures necessary to ensure that their legitimate objectives are met and that the adopted measures do not discriminate between countries and restrict trade

The purpose of TBT Agreement is to ensure technical requirements including packaging, marking and labelling. Further, the TBT Agreement recognises the responsibility and the government's right to take measures necessary to ensure that their legitimate objectives are met and that the adopted measures do not discriminate between countries and restrict trade.

In short, the TBT Agreement should meet five principles:

1. *Non-discrimination* – in terms of preparing, adopting and applying technical regulation and conformity assessment procedure.
2. *Harmonisation* – in terms of developing and using international standard. Codes of Good Practice are elaborated to meet such requirement.
3. *Least Trade Restrictive Measure* – for avoiding unnecessary obstacle to trade.
4. *Equivalence* – in terms of entering agreement between trading partners for adopting technical requirements or mutual recognition of conformity assessment procedures.
5. *Transparency* – to base all standards and regulations on international standards which should be published and notified to WTO. Members should receive time to comment while preparing new regulations. Members should establish enquiry point for all contacts regarding regulations, standards and other related matters.

3.3 Distinctions between SPS and TBT in nutshell

- Both SPS and TBT Agreements are applicable to food in international trade;
- Both Agreements have common features though substantive rules are different;
- Both Agreements embody basic obligations for non-discrimination, advanced notification of proposed measures and, creation of enquiry points;
- Both Agreements encourage the use of international standards;
- Under TBT Agreement, governments are not obliged to use international standard if these seem to be inappropriate due to technological or geographical reasons;

Both SPS and TBT Agreements encourage the use of international standards. However, under SPS Agreement such standards are not used due to scientific basis for potential health risks

- Under SPS Agreement, the only reason for not using such standard is scientific basis for potential health risks;
- TBT Agreement allows governments to impose technical regulations for national security and for curbing deceptive practices; and
- SPS Agreement provides its measures only to the extent that is desired to protect human, animal or plant health on the basis of available scientific information.

3.4 SPS Agreement

The preamble of SPS Agreement embodies:

- Countries sovereignty of promulgating necessary measures is well respected to protect human animal or plant life or health so long as such measures are not arbitrary, and discriminating between member countries and thereby creating disguised restriction to international trade.

- SPS measures are applied on the basis of bilateral agreements or protocols.
- Multilateral framework of rules and disciplines is to guide development, adoption, and enforcement of SPS to minimise their negative effects on trade.
- International standards, guidelines and recommendations help to expedite the process of harmonisation between trading partners and assist in enhancing trade.
- Use of harmonised SPS on the basis of international agencies such as CAC, OIE and IPPC help to promote the protection of human, animal and plant life or health.

3.4.1 Articles in SPS Agreement

SPS consists of 14 articles.

Article 1. General provisions

Annexes form an integral part of SPS Agreement

- The Agreement applies to all the SPS measures, which may directly or indirectly affect international trade.
- Annexes form an integral part of this Agreement.
- TBT is not within the scope of SPS.

Article 2. Basic rights and obligations

- Members have the right to take SPS measures necessary for the protection of human, animal or plant life or health provided they do not differ from the spirit of the agreement.
- SPS measures are applied only to the extent necessary to protect human, animal or plant life or health. This should be based on scientific principle and justified by scientific evidences.
- SPS measures are not applied arbitrarily and not to restrict international trade.
- Assistance may be provided to developing countries that may encounter special difficulties in compliance with SPS resulting in difficulties to market accessibility and, with the formulation and application of SPS.

Article 3. Harmonisation

- Members shall base their SPS measures on international standards, guidelines, or recommendations.
- Members may introduce SPS measures, which may require higher level of protection if deemed necessary by scientific justification.
- Members are encouraged to get involved in Codex, OIE, and IPPC activities relating to development and review standards, guidelines and recommendations as per SPS measures.
- The Committee on SPS measures should develop a procedure to monitor the process of international harmonisation, and coordinate other relevant international organisations.

Article 4. Equivalence

Mutual Recognition Agreements (MRA) are based on the principle of equivalence between two trading partners

- Members shall accept the SPS measures of other Members as equivalent, even if these measures differ from their own or from those used by other members, trading in the same products.
- For this purpose, reasonable access shall be given to the importing member for inspection, testing, and other relevant procedures.
- To reinforce the recognition of equivalence, it is useful to adhere to the Codex Food Import/Export Inspection and Certification systems.

Article 5. Risk assessments and determination of the appropriate level of SPS protection.

- Risk Assessment to be made on available scientific evidence, relevant processes, and production methods.

- Relevant inspection, sampling and testing methods.
- Prevalence of specific disease or pests, existences of pest or disease free areas.

Article 6. Adoptions of regional conditions (pest or disease–free areas, and areas of low pest of disease prevalence)

- Members shall take into account the level of prevalence of specific disease or pests, the existence or eradication or control programmes and the appropriate guidelines as developed by relevant international organisations.

Article 7. Transparency

Enquiry points smoothen the process of transparency among WTO Member countries

- The Annex B of the Agreement contains provisions on information procedures concerning publication of regulations (giving sufficient time before entry into force for comments and adoption, particularly to developing country).
- Establishment of enquiry points, responsible for the provision of answering to all reasonable questions from interest members regarding SPS measures and related documents.
- Notification procedure for new or modified SPS measures which deviate from international standards or recommendations.

Article 8. Control, inspection and approval procedures

- Members shall ensure the procedure to meet the objectives by employing quality assurance in the inspection of the consignments.
- Similar criteria should be used in the equipping of the facilities and in the procedure and the selection of samples of important products so as to minimise inconvenience to applicants, imports, exports, or their agents.
- Evaluation of the potential for adverse effects on human or animal health arising from the presence of additives, contaminants, toxins, or disease causing organisms in food beverages, or feedstuffs.
- Level of protection deemed appropriate by establishing a SPS measure to protect human, animal, or plant life or health.

Article 9. Technical assistance

- Members especially developing countries may receive bilaterally or through the appropriate international organisations, techniques, research and infrastructure including the establishment of national regulating bodies, in the areas of processing.
- Developing countries need support and assistance in the form of advice, credits, donations and grants for the purpose of seeking technical expertise, training and extension equipment.
- If the exporting country lacks basic infrastructure for export of food products, the importing country should consider providing technical assistance to enable the exporting country to meet SPS requirements.

Article 10. Special and differential treatment

As per the Article 10 of the SPS Agreement, the LDCs require longer time frames for compliance

- Members shall take note of the special needs of the developing country members particularly for the LDCs members.
- The LDCs obviously require longer time frames and phased introduction of SPS measure for compliance.
- The participation of developing countries is encouraged in international standard setting bodies.

Article 11. Consultations and dispute settlements

- Cases of special needs of LDCs are taken into account
- Phased introduction of SPS measures and longer time frames for compliance are considered for LDCs.

- Active participation of developing countries is encouraged in the international standard setting bodies.

Article 12. Administration

- A Committee on SPS measures provides a regular forum for consolation.
- The Committee shall encourage the use of international standards, guidelines, or recommendations.
- The Committee maintains close contact with other international organisations like Codex, OIE, IPPC to achieve the objective of securing the best available scientific and technical advice for the administration of this Agreement, and to avoid unnecessary duplication of effort.

Article 13. Implementation

Member countries are encouraged to formulate and implement positive measures and mechanisms to operationalise the provisions of the SPS

- Members are fully responsible under the Agreement for the observance of all obligations set forth herein.
- Member countries are encouraged to formulate and implement positive measures and mechanisms to operationalise the provisions of the SPS.
- Members are further encouraged to rectify inconsistent enforcement procedures adopted by local bodies and non-governmental entities.

Article 14. Final provisions

- The LDCs may delay application of the provisions of this Agreement for a period of five years following the date of entry into WTO.

Issues for comments

- Sensitisation, orientation and seriousness of SPS framework to all the stakeholders is the prima facie of the emerging need of food safe.
- How can the revision of food laws and regulations be expedited taking into account of SPS parameters?
- Capacity building in risk analysis, equivalence and import/export inspection and certification is the pressing reality for immediate focus and attention.

CHAPTER – IV

ROLE OF CODEX AS A BENCHMARK STANDARD FOR INTERNATIONAL TRADE

Codex is recognised as an international food standard body engaged in developing international food standards, guidelines and recommendations for promoting food quality and safety

Codex Alimentarius Commission (CAC) was set up in 1962 with the objectives of protecting the health of the consumers and ensuring fair practices in food trade. It is an inter-governmental body engaged in developing international food standards, guidelines and recommendations for promoting food quality and safety. It provides a common forum where scientists, technical experts, government regulators, international consumer, and industrial organisations exchange their views and experiences to develop international standards and guidelines for assuring safe food supply in international trade.

Box: 4.1

Good manufacturing practices (GMP)

GMP enshrines combination of manufacturing and management practices as per the specifications and customer's expectations. GMP includes food materials and ingredients including additives, which should be used at the approved level for prevention and control of contamination. Proper cleaning and sanitation of processing facilities should be expedited in such a way that undesirable microbes and other contaminants cannot get free passes. Temperature, time, pressure, machine operations, connecting pipes and other processing parameters should be controlled at the specified level to ensure proper processing.

The CAC is particularly responsible for implementing FAO/WHO food standards programme. One hundred and sixty-three countries have become the members of CAC representing about 97 percent of the world population,

'Codex', which means food code or food law, is a Latin word used in industry and by consumers and food regulators. Codex is devoted to "3 Ps" product, process and people. Codex comprises of a collection of food standards, codes of hygiene, codes of GMP and recognised methods of analysis and sampling. Further, it contains general principles, guidelines and recommendations. It contains standards for all principle foods (processed, semi-processed or raw) excepting those of fresh perishable commodities such as fresh milk, which do not move in international trade.

The general feature of Codex standard consists of identification of the product, basic composition, quality factors, limits for food additives, limits for contaminants, and hygienic requirements

Codex has so far developed food standards (237), Code of hygienic or technological practices (41), pesticides evaluated (185), limits for pesticide residues (3,274), guidelines for contaminants (25), food additives evaluated (1005), and veterinary drug evaluated (54).

The general feature of Codex standard consists of identification of the product, basic composition, quality factors, limits for food additives, limits for contaminants, and hygienic requirements. The recommended international code of practices embodies general principles of food hygiene, GMP and incorporates HACCP as a model for food safety assurance system.

4.1 HACCP

HACCP is an important tool for safety assurance of food products

HACCP is a system approach within the food industry or food chain to ensure product safety. HACCP involves a systematic study of food products and their ingredients, handling, storage, packaging and distribution and finally consumers' use.

Box: 4.2

HACCP: A challenge to small enterprises

HACCP helps to identify all the potential hazards in the food chain. After identifying these hazards, critical control points in processing are identified where control measures can be applied to prevent or to reduce or to eliminate these hazards. Documentation of control points at various stages of HACCP is a prerequisite to determine whether a safety level has been achieved. Though it seems to be very simple at the outset, it is a major issue for small enterprises as they lack trained and skilled human resource.

HACCP is a system, which identifies specific hazards, and preventive measures that minimise risks through the identification of control points and establishment of measurable safe operating limits. HACCP is solely a food safety programme, which consists of seven principles (activities) that specifically address three basic objectives i.e. hazard assessment, risk management, and documentation control.

Table 5. The principles and objectives of HACCP

Principles	Objectives
Hazard analysis	Hazard evaluation
Identify critical control points	Risk management
Establish critical limits	
Establish monitoring indicators	
Establish corrective action	
Establish verification procedures	Documentation control
Establish effective record keeping	

4.2 Food labelling

Food labelling system ensures the first hand safety assurance to the consumers

Besides these standards, Codex has prepared a general standard for food labelling, a code of ethics for international standard, and a wide range of guidelines and recommendations for government and industry. The essential criteria for food labelling should be laid down in such a way that consumers could get adequate information about the food. Such information comprises the name of the product, which should be clear and specific and not generic. Labels should contain list of ingredients, net contents and weights, name and address of the producer, country of origin, lot identification, date marking and storage instruction, and date of minimum durability or 'best before' etc.

4.3 Risk analysis

Risk analysis is an emerging new discipline in harmonisation of standards, code of hygienic practices and guidelines. The process of standardisation and its monitoring scheme should be altogether equivalent between trading parties to meet the risk-based objectives. Similarly Mutual Recognition of Agreements (MRA) should be exchanged between two countries provided all requirements for standards, testing and certification procedures etc. are equivalent. This is the weak area where developing countries need support from FAO/WHO and other developed countries in strengthening their

infrastructure. The developing countries should be able to participate in generating data for standardisation and fixing limits for additives, and contaminants, and risk analysis.

Box: 4.3

Risk analysis: A serious limitation to developing countries

In order to promote food trade, the countries should enhance capability to conduct risk analysis. Risk analysis is a scientific method of determining probability of risk to the population. The risk concept is much broader and covers a wide range of risk particularly on food-borne health risk. Risk analysis is a quantitative determination of severity and probability of adverse health effect that can occur to people. While HACCP is process oriented scheme, the risk analysis is population-based. The capacity building on risk analysis in the SAARC countries should be considered as an important area where extended assistance is urgently needed.

4.4 JECFA

JECFA's role as a body for carrying out toxicological evaluation has been elucidated

The Joint FAO/WHO Expert Committee on Food Additives and Contaminants (JECFA) carries out toxicological evaluation for heavy metals, industrial pollutants, natural toxins, veterinary drug residues (VDR) etc. JECFA meets once or twice a year alternatively in Rome and Geneva. The evaluation of JECFA on food additives is estimated on the basis of the amount of additives present in foods, which is expressed on body weight basis. That level of additives may not result in any appreciable health risk over a lifetime consumption of foods. This level of consumption is called Acceptable Daily Intake (ADI). In case of veterinary drugs, JECFA's recommendations are based on toxicology of residues from animal tissues and standard daily intake of foods of animal origin. JECFA also recommends Provisional Tolerable Weekly Intake (PTWI), and Provisional Tolerable Daily Intake (PTDI) for indicating seriousness of toxicity.

4.5 JMPR

The Joint FAO/WHO Meetings on Pesticide Residues (JMPR) undertake toxicological evaluation of pesticide residues. JMPR also proposes Maximum Residue Limits (MRLs) for individual pesticides on specific commodities. MRLs are based on residue levels estimated in supervised trials of farms under Good Agricultural Practices (GAP). The residue intake calculations are done using national food consumption data and information from pesticide residue monitoring programme.

4.6 JECFI

The Joint FAO/IAEA/WHO Expert Committee on Food Irradiation (JECFI) evaluates safety of food irradiation as a process to preserve food and extend shelf life. Experts involved in the evaluation process are food irradiation specialists, toxicologist, biochemist, and microbiologist.

4.7 CAC procedures

Codex procedure consists of eight steps to formulate standards

The Codex process consists of eight steps to formulate standards. All member countries will have opportunity to comment on the proposed standard at step 3 and step 6. The *modus operandi* of CAC is shown in the box below:

Box: 4.4

CAC procedures

Step – 1	Commission decides to develop Codex standard and assigns the tasks to concerned Codex Committee.
Step – 2	The Secretariat of the Commission arranges for the preparation of a "Proposed Draft Standard".
Step – 3	Proposed Draft Standard is sent to members of the Commission and interested international organisation for comments including possible implications for their economy.
Step – 4	The Secretariat of the Commission sends all comments to the Secretariat of the concerned Codex Committee. The Secretariat compiles all the comments at step 3, and proposes amendments to Proposed Draft Standard for consideration at Step 5.
Step – 5	Proposed Draft Standard is submitted to the Commission or to the Executive Committee for its adoption at step 5 as a "Draft standard".
Step – 6	Draft standard is sent to Members of the Commission and interested international organisations for comments and possible implications for their economy. Comments at step 6 are sent to the Secretariat of the Commission.
Step – 7	The Secretariat of the Commission sends all comments to the Secretariat of the concerned Codex Committees. The Secretariat compiles all comments at step 6 and proposes necessary amendments to the Draft Standard. This is placed at a session of the committee and then decided to propose to advance at step 8.
Step - 8	Draft standard submitted to the Commission for its adoption at step 8 as a Codex standard.

4.8 Import/export inspection

The principles for import and export inspection and certification involve basic quality requirements including safety. It recognises equivalence of different systems including analytical methods in achieving food safety. There is a need for conforming guidelines for the inspection and certification procedures in all countries. It calls upon to improve aspects of inspection and laboratory techniques.

Codex standards are more or less acceptable food standards for the purpose of WTO's SPS requirements

Codex has taken the lead in the international harmonisation process in the arena of food quality and safety. The importance of Codex has been dramatically enhanced soon after the inception of WTO in 1995. Now, Codex has emerged as a benchmark standard for trade and settlement of trade dispute. In the past, the exporting countries used to comply with the requirements of the importing countries. The importing countries were likely to introduce stringent quality standards as a protectionist measure. However, Codex standards are more or less acceptable food standards for the purpose of WTO's SPS requirements. All types of disputes can be resolved on the basis of Codex standards, guidelines and recommendations.

For the purpose of SPS requirements, the emphasis of food standards has been shifted from vertical (generic) standards such as food commodity standards to the horizontal standards such as food contaminants and food additives, etc. which can be applied to all the food products for ensuring safety to the consumers.

Issues for comments

- How can the regional views be expressed and translated into action in developing Codex standard, guidelines and recommendations?
- Active participation of international bodies like Codex needs to be strengthened.
- National Codex Committees need to be established and vitalised to present national views relating to standards, guidelines and recommendations.

CHAPTER – V

RISK ANALYSIS AND CODEX

Risk analysis appears to have been used and practised in the society since time immemorial. The written or unwritten codes for food were introduced by all the civilisations irrespective of tribes, geography, religion etc. The guidelines for such food codes reveal that food should be served hot and, stored at safe temperature. Fresh foods should be hygienically prepared and cooked thoroughly before serving for consumption. The present day food supply is exposed to a myriad of hazards emanating from sources such as improved agricultural practices, which encourage increased use of chemicals in the cropping system.

Codex has recognised and internalised risk analysis as a science based approach in assuring safety to the consumers

The FAO/WHO Conference on Food Standard and Chemicals in Food and Food Trade (Rome, 1991) has recommended all relevant Codex committees and their advisory bodies to "continue to base their evaluations on suitable scientific principles and ensure needful consistency in their risk assessment determination".

Risk analysis may not only determine the nature of the hazard but also develop measures for its prevention and control. The risk analysis is a three-step process comprising of risk assessment, risk management and risk communication (FAO/WHO 1995).

There is fundamental difference between a hazard and risk from the point of risk analysis.

Hazard is a substance consisting of physical, chemical or biological (microbiological) agent, or condition of food with potentials to cause adverse health effect.

Risk is a function of the probability of an adverse health effect and severity of that effect consequential to hazards in foods. This is expressed in terms of probability of risk to the consumer.

The prime concern of risk-based food safety measures is to reduce hazard in the food, in the food supply chain, as well as the risk of adverse health effects to the exposed consumer population.

5.1 Risk assessment

Risk assessment is the scientific evaluation of known or potential adverse effects resulting from human exposure to food borne hazards.

Four steps of risk assessment are hazard identification, hazard characterisation, exposure assessment, and risk characterisation

Risk assessment consists of four analytical steps: hazard identification, hazard characterisation, exposure assessment, and risk characterisation (Lammerding, 1997). The resultant output of risk assessment is a numerical estimate along with attendant uncertainties of the occurrence and likelihood of the adverse health effects associated with specified food borne hazards.

- *Hazard identification* – It refers to the possible presence of biological, chemical or physical agent present in a particular food or group of foods capable of causing adverse health effects to people.
- *Hazard characterisation* – It embodies elements of qualitative and quantitative evaluation of the nature of adverse health effect, and may include a dose /response assessment.

- *Exposure assessment* – The likely occurrence of biological, chemical, or physical agents through dietary intake.
- *Risk characterisation* – It takes into account of all the three elements of risk assessment viz.: hazard identification, hazard characterisation and exposure assessment into an estimation of the probability of occurrence and severity of known or potential adverse health effects in the population.

In risk assessment process, scientific value judgements and other choices are inevitably involved at some decision points. Inclusion of issues other than science is not allowed in the risk assessment work. Risk assessors should have clear guidelines in reaching judgements and choices. The 29th session of Codex Committee on Food Additives and Contaminants (CCFAC) 1997, recommended to arrive at public health implications for a level of 15 (g/kg) aflatoxin in peanuts for further processing as compared with a level of 10 (g/kg). The estimation of the risk arising from *Listeria monocytogens* in different susceptible population groups relative to the general population.

The criterion for ranking of hazards, and characterisation of particular population considered at risk, should also be identified for risk assessors. The choice of safety factors needs to be extrapolated from chemical toxicity data extracted from animal models to man.

5.2 Risk management

Risk management decisions are based on the process of weighing policy options taking consideration of acceptable level of risk

Risk management is the process of weighing policy alternatives taking account of risk assessment and other factors relevant for health protection of consumers and selecting and implementing appropriate control measures in the food production process in view of promoting fair trade practices, and if required, selecting appropriate prevention and control options. The decisions on risk levels should be taken primarily on the basis of its implication of human health and therefore, arbitrary and unjustified differences in these levels should be avoided in international trading practices. Such risk management decisions are normally affected by technological feasibility, economical reasons, and political and social concerns.

Risk managers should have defined criteria taking all relevant and agreed factors into consideration. Risk management policy options are categorised in view of taking appropriate approach to acceptable levels of risk as follows:

- *Zero Risk Policies* e.g. de minimus ADI
- *Risk Balancing Policies* e.g. cost-benefit as low as reasonably achievable (ALARA).
- *Risk Threshold Policies* e.g. specified level of risk deemed acceptable.
- *Risk Comparison Policies* e.g. comparison between sources and precedence.

5.3 Risk communication

Providing safety assurance to the consumer, based on risk assessment and risk management principles, is the key element in risk communication

Risk communication is the interactive exchange of information and opinions concerning hazard and risks among risk assessors, risk managers, consumers, industry, the academia, and other interested parties based on the findings of risk assessment and risk management decisions.

Risk Analysis process within Codex takes into consideration of the following aspects: food additives, chemical contaminants, pesticide residues, veterinary drug residues and biological agents, food labelling,

methods of analysis and sampling, meat hygiene, food import/export inspection, certification system and, nutrition and foods for special dietary uses.

All science-based decisions are taken on the above components taking account of world-wide data on particular element or compound, or additives and their health implication, as evidenced by toxicological evaluation conducted by competent research laboratories established in developed countries.

Risk communication efforts undertaken by Codex involve dissemination through various Codex committees where member states can participate in the meetings and exchange information

Risk management parameters are ascertained by Codex commission/committees. JECFA and JMPR also substantiate these appropriate levels of protection.

Risk communication efforts undertaken by Codex involve dissemination through various Codex committees where member states can participate in the meetings and exchange information.

During the FAO/WHO Expert Consultation on Risk Analysis on 13-15 March 1995, WHO emphasised the importance of harmonisation procedure of risk analysis for obtaining comparable results. Developing harmonised food standard is, therefore, the starting point in this endeavour. The SPS agreement focuses on risk analysis as the key element in making food safety decisions in international food trade.

Issues for comments

- How to enhance regional capacity in carrying out risk analysis for decision making on food safety?
- Enhancement of human resource should be considered topmost priority to carry out risk analysis at regional level.
- Risk analysis concept is to be made the lifeline for assuring safety and consumers' protection.

CHAPTER – VI

REGIONAL CONTEXT ON THE ENFORCEMENT OF SPS RELATED MATTERS

SAARC regional situation of food adulteration shows an upward trend

The general trend of food quality in some countries of the SAARC region shows that food adulteration is still predominant. There are large number of small-scale business enterprises where quality management still remains the biggest challenge. Bangladesh has reported that the food adulteration rate in the country stands at 45-50%, which is one of the highest incidences in the region (Table 7). The degree of adulteration ranged between 42.57% and 54.30% over a period of two decades. The implementation of food safety rules needs to be expedited to avert the high incidence of food adulteration by strengthening the food inspectorate and introducing preventive food safety programmes. This requires lot more efforts to speed up the process of food monitoring schemes. Majority of food samples seems to have violated vertical standards and are grossly categorised under food adulteration. The degree of violation may scale if thorough monitoring of pesticides residues and other chemicals are seriously considered.

While improvement in quality and safety of food supplies in domestic market is of paramount importance to enhance safety and consumer protection, management of the safety and quality of food exports is absolutely essential for the unhindered flow of export trade. The SPS Agreement has laid greater emphasis on the risk-based approach to enhance the safety of food products and, therefore, the maintenance of quality is a *sin qua non* for export promotion.

The adulteration trend is quite rampant in the SAARC countries. The true picture is not yet known, however, fathoming adulteration level in the region depends upon the frequency of inspection and the resources available to carry out the food safety programme. While India recorded adulteration trend to the tune of 10%, other SAARC countries Bangladesh, Nepal and Sri Lanka have reported adulteration ratio around 42-50%, 15-18% and 20-30% respectively (See Table 6, 7, 8, 9). Majorities of the substandard samples do not comply with the set standard.

Table 6. Adulteration in India during 1981-1994

Year	No of samples examined	No of samples found adulterated/ misbranded	Percentage of adulteration
1981	133,242	19,050	14.2
1982	129,595	16,765	12.9
1983	129,062	17,965	13.9
1984	122,296	14,990	12.2
1985	128,571	14,677	11.4
1986	121,969	13,730	11.2
1987	131,391	14,091	10.7
1988	130,490	15,365	11.8
1989	122,599	11,549	9.4
1990	118,580	11,124	9.3
1991	115,554	12,841	11.1
1992	111,591	11,853	10.62
1993	992,78	85,62	8.62
1994	107,360	10,370	9.65

Source: PFA (ADG), Department of Health Services, India.

Table 7. Adulteration in Bangladesh during 1981-2000

Years	Total no. of samples tested	No. of adulterated samples	Percentage of adulterated samples
1981	3,736	1,703	45.55
1982	4,668	2,548	54.30
1983	4,833	2,057	42.57
1984	3,176	1,580	49.90
1985	2,615	1,279	49.90
1986	2,647	1,387	52.40
1987	2,632	1,311	49.80
1988	2,416	1,139	47.10
1989	3,585	1,850	48.40
1990	2,848	1,407	48.40
1991	3,269	1,762	53.90
1992	5,986	2,294	53.93
1993	7,082	3,341	47.20
1994	5,621	2,556	45.48
1995	4,460	2,055	46.08
1996	4,992	2,137	46.08
1997	5,785	2,994	51.76
1998	5,554	2,832	51.0
1999	5,003	2,189	43.76
2000	4,582	2,383	52.01

Source: Food Laboratory, Institute of Public Health, Mohakali, Bangladesh.

Table 8. Adulteration in Nepal during 1992/93 to 2000/2001

Fiscal year	Total no of samples	No of sub standard samples	Percentage of substandard samples
1992/93	2,559	595	23.2
1993/94	2,529	484	19.1
1994/95	2,684	570	21.2
1995/96	876	121	13.8
1996/97	1,599	272	17.8
1997/98	1,588	270	17
1998/99	1,188	179	15.2
1999/2000	1,814	341	18.7
2000/2001	1,370	221	16.1

Source: DFTQC, Annual Reports (1992/93 to 2000/2001), Kathmandu, Nepal.

Table 9. Adulteration in Sri Lanka during 1991-1996

Year	Total samples analysed	Adulterated sample		Poor quality sample		Mislabelled sample	
		No.	%	No.	%	No.	%
1991	2,500	294	11.76	321	12.84	-	-
1992	2,299	316	13.71	215	9.35	-	-
1993	2,239	247	21.03	240	10.72	6	0.26
1994	1,740	186	10.68	205	11.78	5	0.28
1995	1,209	74	6.12	170	14.06	1,281	1.00
1996	1,057	93	8.80	131	12.39	-	-

Source: Report of Government Analyst, Sri Lanka.

6.1 Preservatives

Preservative means a substance, which can inhibit, retard or arrest the process of fermentation, acidification or other decomposition of food

Preservative means a substance which when used in food, can inhibit, retard or arrest the process of fermentation, acidification or other decomposition of food.

There are two classes of preservatives:

1) Class -I Preservatives

Addition of this class of preservative is not restricted unless provisioned in the food rules. Codex has not mentioned this class of preservatives. Preservatives: Common salt, sugar, dextrose, spices, vinegar or acetic

acid, honey, are provisioned by India, Bangladesh, Nepal, Pakistan, Sri Lanka as class I.

India alone has classified edible vegetable oil in this category of preservatives. Bangladesh, Nepal and Pakistan consider wood smoke under this class of preservative. Hops and portable alcohol are categorised in this class of preservatives by Bangladesh, Nepal, Pakistan and Sri-Lanka. Bangladesh and Pakistan include saltpetre under this class of preservative (Table 10).

Table 10. Class-I Preservatives

Class I Preservatives	India	Pakistan	Bangladesh	Sri Lanka	Nepal
Not restricted unless otherwise provided in the rules	1. Common salt 2. Sugar 3. Dextrose 4. Glucose (syrup) 5. Spices 6. Vinegar or acetic acid 7. Honey 8. Edible vegetable oils	1. Common salt 2. Sugar 3. Dextrose 4. Glucose (syrup) 5. Spices 6. Vinegar or acetic acid 7. Honey 8. Wood smoke 9. Hops 10. Commercial saltpetre 11. Alcohol or potable spirits	1. Common salt 2. Sugar 3. Dextrose 4. Glucose (syrup) 5. Spices 6. Vinegar or acetic acid 7. Honey 8. Wood smoke 9. Hops 10. Commercial saltpetre 11. Alcohol or potable spirits	1. Common salt 2. Any soluble carbohydrate sweetening matter 3. Spices 4. Vinegar or acetic acid 5. Honey 6. Hops 7. Potable spirits or wines	1. Common salt 2. Sugar 3. Dextrose 4. Glucose (syrup) 5. Spices 6. Vinegar or acetic acid 7. Honey 8. Wood smoke 9. Hops 10. Alcohol

2) Class-II Preservatives

Acceptable limits of preservatives do not comply each other in SAARC countries

The preservatives in this category require fixing their limit of use in the food product. No person shall use more than one class-II preservative in any particular food (Table 11). Codex has recommended 34 different preservatives in this category. All countries of the SAARC region have approved benzoic acid and its salt, sulphurous acid and its salt, and nitrates and nitrites of sodium or potassium in their regulation depending upon the type of food and their level of use. Sorbic acid and its salt are also included in many countries except Nepal. India and Sri Lanka have accommodated nisin, and propionic acid in their food regulation.

Table 11. Class II Preservatives

Codex	India	Pakistan	Bangladesh	Sri Lanka	Nepal
1. Benzoic acid 2. Potassium metabisulfite, Potassium bisulfite 3. Nitrate or Nitrite of potassium 4. Calcium ascorbate 5. Calcium benzoate 6. Calcium hydrogen sulphite 7. Calcium propionate 8. Calcium sorbate 9. Nisin 10. Carbon dioxide 11. Cupri sulphate 12. Ethlyl p-hydroxy benzoate 13. Hexamethylene tetramine 14. Methyl p—hydroxy-benzoate 15. Mineral oil, food grade 16. Potassium ascorbate 17. Potassium benzoate 18. Potassium propinate 19. Potassium sorbate 20. Potassium sulphite 21. Propionic acid 22. Propyl p-hydroxy benzoate 23. Sodium benzoate 24. Sodium hydrogen sulphite 25. Sodium meta bisulphite 26. Sodium propinate 27. Sodium nitrite 28. Sodium nitrate 29. Sodium propionate 30. Sodium sulphite 31. Sodium sorbate 32. Sorbic acid 33. Stannous chloride 34. Sulphur dioxide	1. Benzoic acid and its salts 2. Sulphurous acid and its salts 3. Nitrates or Nitrites of sodium or potassium 4. Sorbic acid and its Na,K,and Ca salts. 5. Nisin 6. Sodium and calcium propionate 7. Methyl or propyl para-hydroxy Benzoate 8. Propionic acid including esters or salts 9. Sodium diacetate 10. Sodium, Potassium, and Calcium salts of lactic acid	1. Benzoic acid and its salts 2. Sulphurous acid and its salts 3. Nitrates or Nitrites of sodium or potassium 4. Sorbic acid and its salt	1. Benzoic acid and its salts 2. Sulphurous acid and its salts 3. Nitrates or Nitrites of sodium or potassium 4. Sorbic acid and its salt	1. Benzoic acid and its salts 2. Sulphurous acid and its salts 3. Nitrates or Nitrites of sodium or potassium 4. Sorbic acid 5. Propionic acid 6. Biphenyl 7. 2-Hydroxy-biphenyl 8. 2(Thiazole 4-yl) benzimidazole 9. Hexamine 10. Nisin	1. Benzoic acid and its salts 2. Sulphurous acid and sulphur dioxide. 3. Nitrate or Nitrites of sodium or potassium

Note: Use of more them one Class II Preservatives in or upon food is prohibited.

6.2 Pesticide residues

Regional perspective is not visible in pesticide residues

Food contaminants is one of the important areas which need to be given due priority so far as the international food trade is concerned. The importing countries have expressed their concerns on pesticide residue in the tea traded from India and Nepal. Majorities of SAARC nations have not embodied pesticide residue level on fresh foods except India. However, Nepal has fixed limits for pesticide residue on grains and grain products. It is also evident that not only limits fixed for pesticide residue but the facilities required for their regular monitoring is not also available with the Food Control Agencies of the SAARC countries mainly Bangladesh, Pakistan and Sri Lanka. There are, however, some inadequate facilities available with other institutions, which make monitoring work cumbersome.

6.3 Heavy metals

The Codex has recommended limits only for lead, copper, arsenic, tin, zinc, and iron. India has fixed limit for above metals more than the limit Codex has set and, in addition, the limits for other metals such as cadmium, mercury, and methyl mercury are also included. With exception of mercury and methyl mercury, Bangladesh and Pakistan have set limits for other metals such as aluminium, antimony, boron, fluorine, and silver etc. (Table 12). All countries should harmonise their

standards and limits with Codex approved level and, in this process, national monitoring of food products should be expedited to generate regional database and that be reflected in Codex work.

Table 12. Limits for heavy metals

Metals (ppm)	Codex	India	Pakistan	Bangladesh	Sri Lanka	Nepal
			Max	Max		
Lead	0.1-2.0	0.2-10	2 (liquid) 20 (solid)	2 (liquid) 2 (solid)	Not included	Not included
Copper	0.1-50.0	1.5-300	10 (solid)			
Arsenic	0.1-2.0	0.1-5.0	0.1 (liquid) 2.0 (solid)	0.1 (liquid) 2.0 (solid)		
Tin	150-250	5-25	100	100		
Zinc	5	5-100	100	100		
Cadmium		0.1-1.5	6	6		
Mercury		fish 1.0 other food 1.0				
Methyl Mercury		0.25				
Aluminium			250	250		
Antimony			2.0	2.0		
Boron			80	80		
Fluorine			1.5	1.5		
Silver			1.0	1.0		
Iron	15-50	-	-	-	-	-

6.4 Food colours

Food colouring matters are generally classified into a) natural colouring matter b) inorganic matter pigments and c) synthetic food colours. Food colours are important from the point of their wider uses in traditional sweetmeats, which are quite abundant in the region. In view of the similarities in dietary practices, the approved list of colours whether in the form of natural or other colours seem to be identical in the region. While India has approved inorganic matter and pigments such as titanium dioxide (low grade) up to a maximum of 1% only in chewing gums, other countries of the region have banned its use.

Carotens, carotenoic acids and its methyl of ethyl esters derivatives, anatto, chlorophyll, saffron, turmeric, curcumin etc. are the major natural colouring matters which are approved in the food regulations of the South Asian countries

Carotens, carotenoic acids and its methyl of ethyl esters derivatives, anatto, chlorophyll, saffron, turmeric, curcumin etc. are the major natural colouring matters which are approved in the food regulations of the region (Table 13.1).

India has approved only eight synthetic colours (Table 13.2). Since Bangladesh and Pakistan have not amended their legislation for a long time, their regulations contain a maximum number of approved synthetic colours. In Nepal, erythrosine colour contains more than Sri Lanka's approved list of colours. It is suggested that all SAARC countries take initiatives to harmonise approved colours in line with Codex standards.

Table 13.1. Approved lists of food colours: colouring matters

Colouring matters	Codex	India	Pakistan	Bangladesh	Sri Lanka	Nepal
Natural colouring matters						
1. β-Carotene	Edible fats & oils-25 ppm Canned green peas, Canned mangoes and Mayonnaise-100 ppm	β - carotene β -apo-8' carotenal Methylester of β -apo 8' carotenoic acid, Ethylester of β - apo-8' carotenoic acid, Canthaxanthin	Carotenes	Carotenes	Carotene	Carotenes or β-Carotene
2. β-apo-8' carotenoic acid and methyl or ethyl esters	Canthaxanthin Chlorophyll Riboflavin Chlorophyll	Chlorophyll Riboflavin (Lactoflavin), Caramer, Annatto	Chlorophyll Lactoflavin Caramel Annatto	Chlorophyll Lactoflavin Caramel Annatto	Chlorophyll Caramel Annatto Saffron	Chlorophyll Riboflavin (Lactoflavin) Caramel
3. β-apo-8' carotenal	Caramel Annatto Curcumin or Turmeric Cochineal and Carminic acid	Saffrom Curcumin or Turmeric	Saffron, Curcumin, Cochineal, Ratanjot	Saffron, Curcumin, Cochineal, Ratanjot	Curcumin Cochineal Flavine indigo Safflower Sandalwood	Annatto, Saffron Curcumin or Turmeric Caramine Ratanjot, Hematoxilyn Alkanet, Alkanin, Lantophyll
Inorganic matters and pigments						
	-	Prohibited except for chewing gum may contain titanium dioxide (food grade up to max of 1%)	Prohibited	Prohibited	-	Prohibited

Table 13.2. Synthetic food colours

S. N.	Colour	Colour index	Colour index name	Colour index (1956) No.	Chemical class	India	Pakistan	Bangladesh	Nepal	Sri Lanka	Codex
1	Blue	1	Indigo Carmine	73015	Indigoid	#	#	#	#	#	-
		2	Brilliant Blue FCF	42090	Triarylmethane	#	#	#	#	#	#
		4	Indanthrone	69800	Anthraquinone		#	#			
		5	Patent Blue V	42051	Triarylmethane		#	#			
2	Violet	2	Violet 6B	42640	,,		#	#			
		3	Violet BNP	42580	,,		#	#			
3	Green	1	Sulpho Green 2BA	42085	,,		#	#			
		2	Acid Brilliant Green ASF	42095	,,		#	#			
		3	AF green No. 3 or Fast Green FCF	42053	,,	#	#	#	#	#	#
		4	Greens or Wool Green B.S.	44090	,,		-	-	#	#	
4	Yellow	3	Sunset yellow FCF	15985	Monoazo	#	#	#	#	#	#
		4	Tartrazine	19140	Pyrazolone	#	#	#	#	#	#
5	Brown	1	Brown FK	-	Disazo		#	#			
		2	Chocolate Brown FB	-	Monoazo		#	#			
		3	Chocolate Brown HT	2285	Disazo		#	#			
6	Red	1	Ponceau SX	14700	Monoazo		#	#			
		9	Amaranth	16185	,,		#	#	#		#
		14	Erythrosine, BS	45430	Xanthene	#	#	#	#	#	#
			Ponceau 4R	16255	Azo	#	-	-	#	#	#
			Carmoisine	14720	,,	#	-	-	#	#	
			Fast Red E	16045	,,	-	-	#		#	
7	Black	1	Black P.N	28440	Disazo		#	#	-	-	#

#: Provisioned

6.5 Antioxidants

All the countries of the SAARC region except Nepal have set limits for antioxidants (Table 14). However, the limits for antioxidants need to be revised in keeping with the Codex list and their permissible level of use. Except Sri Lanka, other countries have set limits in percentage instead of ppm level set by Codex. It is, therefore, suggested to harmonise processing industries in conformity with the Codex limit.

Table 14. Limits for antioxidants

S.N.	Antioxidants	Codex (ppm)	India	Pakistan	Bangladesh	Sri Lanka	Nepal
1.	Ethyl gallate		0.10%	Max	Max	100 ppm	Not included
2.	Propyl gallate	100 ppm	0.10%	0.10%	0.10%	100 ppm	
3.	Octyl gallate	-	0.10%			100 ppm	
4.	Dodecyl gallate	-	0.1%				
5.	Ascorbyl palmitate	10-100 ppm	0.02%			200 ppm	
6.	Butylated hydrooxyanisole (BHA)	140-200 ppm	0.02%	0.02%		200 ppm	
7.	Citric acid	-					
8.	Tartaric acid	-					
9.	Gallic acid	-	0.01%			100 ppm	
10.	Resin Guaiace	-	0.05%				
11.	Tertiary butyl hydroxyquinone (TBHQ)	120 ppm	0.02%			200 ppm	
12.	Gumeguaic	-		0.01%	0.01%		
13.	Nor-dihydroguaic acid	-		0.01%	0.01%		
14.	Thiopropionic acid	-		0.01%	0.01%		
15.	Dilauryl thiodipropionate	200 ppm		0.02%	0.02%		
16.	Tocopherol	50-500 ppm		0.03%	0.03%		
17	Ascorbic acid and its harmless derivatives	30-1000 ppm		Any Qty.	Any Qty.		
18.	Butylated hydroxytolune (BHT)	60-100 ppm					
19.	Iso- Ascorbic acid	150-500 ppm					
20.	Isopropyl Citrate	10-300 ppm					
21.	Monoglyceride citrate	100 ppm					
22.	Sodium ascorbate	50-1000 ppm					
23.	Sodium erythorbate	500 ppm					

6.6 Emulsifying and stabilising agents

Except Nepal, all the other SAARC countries have fixed limits for the emulsifying and stabilising agent specifically meant for fruit and beverage products

The use of emulsifying and stabilising agents should be conceived in terms of their need for the food processing industries without causing any potential health risk to the consumers. The SAARC countries lag behind in building competency in food additives, in fixing their limits and in monitoring their concentration on foods. Except Nepal, all the other member countries of the SAARC have fixed limits for the emulsifying and stabilising agent specifically meant for fruit and beverage products. All countries of the region except Bangladesh and Pakistan have banned use of Brominated Vegetable Oil (BVO).

6.7 Food labelling system

Labelling provisions in SAARC do not comply with codex guidelines

The Codex approach for labelling requires name of the food, list of ingredients, net contents, drained weight, name and address of the manufacturer, country of origin, lot identification, date marking, storage, instruction for use, and date of manufacturing etc. India has complied its requirement with Codex provisions (Table 15). Non-compliance with labelling requirement is one of the reasons for detention or rejection of food consignments. The debate on labelling of Genetically Modified (GM) foods has been very much pronounced in media these days. The safety of GMO foods is yet to be ascertained by developing and validating suitable analytical methodology. However, adherence to the mandatory labelling of foods should be considered as starting point for assuring the safety of foods.

Table 15. Mandatory labelling of packaged foods

Parameters	Codex	India	Sri Lanka	Pakistan	Bangladesh	Nepal
Name of the food	✓	✓	✓		✓	✓
List of ingredients	✓	✓	✓	✓	✓	✓
Net contents and drained weight	✓					
Name and address	✓	✓	✓	✓	✓	
Country of origin	✓	Not clearly				
Lot identification	✓	✓	✓		✓	✓
Date of marking/ storage instruction	✓	✓	✓			
Instruction for use	✓				✓	
Manufacturing date		✓			✓	✓
Language on label			Any two of English and Sinhala	Urdu or English	Bengali only for skimmed/ milk both sweetened and unsweetened	Nepali or English

6.8 Generic standards of foods

Existences of diverse standards whether in horizontal or vertical standards are the burning issues

Food commodities, which are either normally common staples or their products, are included in the generic food standard formulation. Therefore, milk and milk products, grains and grain products, edible oils and fats, fruits and vegetable products, spices, sugars and sugar products, tea and coffee etc. come under generic standards. Though majority of the SAARC countries have fixed generic standards, they have yet to fix tolerance limits for a few preservatives, colours, antioxidants, emulsifying and stabilising agents and other type of food additives. India has taken lead in the SAARC countries in fixing limits for stabilising agents, buffering agents, flavouring agents and anti-caking agents.

SAARC food standards for edible vegetable oils have been reviewed here from the perspective of their compliance with Codex standard, as a case study.

Rapid development in oilseed breeding technology may lead to new varieties and, their responses to various geographical conditions may produce products having some changes in the composition and characteristics. In order to avoid such discrepancies, standard formulation system should accommodate such reality, and thus, regional database is essential to address this issue.

The key physio-chemical characteristics which are identified to exhibit the authenticity and purity of oils are based on general parameters such as butyrorefractometer (BR) reading or Refractive Index (RI) value, iodine value, Free Fatty Acid (FFA) or acid value and other qualitative, semi quantitative or fully quantitative parameters. They are selected taking account of the price of particular oils in the respective countries and their possibility of adulteration. Most of the standards of vegetable oil in Bangladesh and Pakistan showed greater resemblance.

Standards for edible fats and oils are compared in SAARC

As standards should keep pace with scientific and technological advancement and socio-economic paradigm, new knowledge and information emerge as a consequence of such interaction. There was a time when oil was expelled by traditional *Ghani* process, which was moderately improved by mechanical expeller. Now technology of oil refining made inroads to this sector resulting into three categories of oils: crude, partially refined and refined oils. The common problem in this part of the world is the adulteration, which may comprise of the dilution of expensive oils with cheaper oils, trace element contamination may aggravate quality of oil by rapid lipid oxidation, and heavy metals contamination may pose threat to public health.

Regional position of Ghee standard needs to be raised in Codex meetings

Edible vegetable oils of palm base are increasingly in use in countries of the SAARC region (Table 16, 17, 18). There are basically three types of products namely palm oil, palm kernel oil, and palm olein. India, Nepal and Sri Lanka have incorporated standard of palm oil in their food legislation. Nepal has included peroxide value as one of the important parameters in determining quality of oil. Bangladesh and Pakistan do not include palm oil standard in their basic food regulations. Melting point is included only in India and Nepal. The limit of saponification value is same in all the three countries India, Nepal and Sri Lanka. India has added flash point in the standard. While India has introduced double indicator for BR reading and RI value, as well as for acid value and FFA, Nepal has adopted Codex modality of standard formulation procedure.

Table 16. Palm oil

Parameters	Codex	India	Sri Lanka	Nepal
BR reading at 50^0 C or RI at 50^0 C	1.449-1.455	35.5-44 1.4491-1.4689	1.4546-1.4560	1.4491-1.4552
Melting point		37^0C		37^0C
Saponification value	190-209	195-205	195-205	195-205
Iodine value	50-55	45-56	50-55	45-56
Unsaponifiable matter (%)	>1.2	>1.2%	>1.0	>1.2
Acid value or FFA	>10 V 0.6 R	>10		>6.0
Peroxide value	10 meq peroxide/ kg oil			>10
Rancidity		-ve	-ve	-ve
Clear				
Suspended or other Foreign matter		-ve		-ve
Separated water		-ve		-ve
Colouring or flavouring substance				
Flash point		250^0C	-ve	-ve
Flavouring substance		-ve	-ve	-ve
Mineral oil		-ve	-ve	-ve

V=Virgin, R=Refined, >=not greater than,<=not less than

Table 17. Palm Kernel Oil

Parameters	Codex	India	Sri Lanka	Nepal
BR reading at 40^0 C or RI at 40^0 C	1.448-1.452	35.3-39.5 1.4491-1.4520	1.448-1.452	1.4490-1.4520
Saponification value	230-254	237-255	230-254	237-255
Iodine value	14.5-19.5	10-23	13-23	10-23
Unsaponifiable matter	>1.0%	>1.2%	>1.0%	>1.2%
Acid value	>0.6	>6.0	FFA 0.25 %	>6.0
Peroxide value (10 meq peroxide/kg oil)	>10			>10
Flash point		<$25^0$0C	-ve	-ve
Mineral oil		-ve	-ve	-ve
Clear				
Rancidity		-ve	-ve	-ve
Suspended or other Foreign matter		-ve	-ve	-ve
Separated water		-ve	-ve	-ve
Colouring or flavouring substance		-ve	-ve	-ve
Additives	+	+		
Contaminants	+	+		
Hygiene	+	+		-ve
Labelling	+	+		
Reichert value	4-7	+		
Polenske value	8-12			
Moisture				

Table 18. Palmolein

Parameters	India	Nepal
BR reading at 40^0 C or RI at 40^0 C	43.7-52.5 1.4550-1.4610	 1.4550-1.4610
Saponification value	195-205	195-205
Iodine value	54-62	54-62
Unsaponifiable matter	>1.2%	>1.2%
Acid value	>6.0	>6.0
Peroxide value (meq peroxide/kg oil)		>10
Flash point	$>250^0$C	-ve
Mineral oil	-ve	-ve
Clear	+	+
Rancidity	-ve	-ve
Suspended or other Foreign matter	-ve	-ve
Separated water	-ve	-ve
Colouring or flavouring substance	-ve	-ve
Additives		
Contaminants		
Hygiene		
Labelling		
Cloud point	18^0C	

Codex has neither fixed standard for ghee nor has a programme through commodity specific committees. Reichert Meissl (RM) value is one of the important parameters to identify quality of ghee. India has fixed different ranges of RM values for different geographic regions and specifically mentioned different limits for cotton tract areas, and other areas. Peroxide value is fixed only by Nepal in food standard. Bangladesh, Pakistan and Sri Lanka have introduced negative Baudoin Test. Only Bangladesh and Sri Lanka have fixed limit for saponification values (Table 19).

Table 19. Ghee

Parameters	India*	Pakistan	Bangladesh	Sri Lanka	Nepal
BR reading at 40^0 C or RI at 40^0 C	40-43	40-43.5	40-43.5	 1.4524-1.4561	1.4538-1.4559
RM value	28	<26	<26	23-32	<28
Acid value or FFA	 >3.0	 >2%	 >2%	 >2.5%	>6
Peroxide value					>10 meq peroxide oxygen /kg ghee
Moisture	>0.5	>1.0%		>0.5%	>0.5%
Baudoin test	-ve	-ve		-ve	
Polenske value		>2.8	>28	1.5-35	
Characteristic natural colour & flavour					
Additives	+ve				
Saponification value			220-222	218-234	

**India has adopted three ranges of BR Reading and RM values; Cotton tract areas, have BR Reading 41.5-45, and RM value 21; other cotton tract areas have BR Reading 40-43, and RM value 26, some areas have RM values 24,26, and 28 depending upon the locations.*

There are so many divergences in terms of adding cheaper product to expensive product. This has hampered the process of preventing and controlling rampant adulteration practices in South Asia

While reviewing food standards of the SAARC countries, it is apparent that these standards inherit, more or less, the legacy of food legislation that were introduced during the colonial rule. India and Nepal have reviewed their food standards, which do not reflect the total need of the region. The regional database does not exist to replace regional views on Codex works. There are so many divergences in terms of adding cheaper product to expensive product, which makes enforcement cumbersome in the prevention and controlling of rampant adulteration

practices in the region. The conventional methodologies do not meet their requirements for the supply of genuine products in the market.

Tables 20, 21, 22, 23, 24, 25, 26 depict comparative standards for sunflower seed oil, corn oil, safflower seed oil, soybean oil, *vanaspati ghee*, olive oil, and sesame seed oil.

Table 20. Sunflower seed oil

Parameters	Codex	India	Pakistan	Nepal
BR reading at 40^0 C or RI at 40^0 C	1.467-1.469	57.1-65 1.4640-1.4800	62-65	1.4660-1.4690
Saponification value	188-194	188-194	190-196	188-194
Iodine value	110-143	100-145	135-145	110-143
Unsaponifiable matter (%)	>1.5	>15	>1.0	>1.5
Acid value or FFA	>4.0	>6.0		>4.0
Peroxide Value (meq peroxide oxygen/kg oil)	>10			>10
Rancidity	-	-ve		-ve
Flash point (^{0}c)		<250		
Clear	-	+	-	
Suspended or otherForeign matter		-	-	-
Separated water		-	-	-
Colouring				
Flavouring substance	+	-	-	-
Mineral oil		-	-	-
Hygiene	+			
Labelling	+			
Contaminants	+			

Table 21. Corn or maize oil

Parameters	Codex	India	Sri Lanka	Nepal
BR reading at 40^0 C or RI at 40^0 C	1.465-1.468	56.7-62.5 1.4637-1.4675	1.4650-1.4680	1.4650-1.4680
Saponification value	187-195	187-195		187-195
Iodine value	103-128	103-128	103-128	103-128
Unsaponifiable matter (%)	>2.8	>1.5%	>1.5	>2.0
Acid value or FFA	>4.0	>0.5	>1.0	>0.5
Moisture (%)			>6.5	
Peroxide Value (meq / peroxide oxygen/ kg oil)	>10			>10
Rancidity		-ve		-ve
Flash point				
Clear		+ve		+ve
Suspended or other foreign matter	-ve	-ve	-ve	-ve
Separated water		-ve		-ve
Colouring				
Flavouring substance	-ve	-ve	-ve	-ve
Mineral Oil		-ve	-ve	-ve
Additives				
Labelling				
Contaminants				

Table 22. Safflower seed oil

Parameters	Codex	India	Nepal
BR reading at 40^0 C or RI at 40^0 C	 1.467-1.470	62.4-64.7 1.4674-1.4689	 1.467-1.470
Saponification value	186-198	186-196	186-198
Iodine value	135-150	100-145	135-150
Unsaponifiable matter (%)	>1.5	>1.0	1.5
Acid value or FFA	>0.6	>6.0	>0.6
Peroxide Value (meq peroxide oxygen/kg oil)			>10
Beller test		>16^0C	
Rancidity		-ve	-ve
Clear			
Suspended or other foreign matter		-ve	-ve
Separated water		-ve	-ve
Colouring	+		
Flavouring substance	+	-ve	-ve
Mineral oil		-ve	-ve
Antioxidants	+		
Hygiene	+		
Labelling	+		

Table 23. Soyabean oil

Parameters	Codex	India	Pakistan	Bangladesh	Sri Lanka	Nepal
BR reading at 60^0 C or RI at 60^0 C	 1.466-1.470	58.5-68.0 1.4649-1.4710	62.5-64	62.5-64	 1.472-1.476	 1.4550-1.4610
Saponification value	189-195	189-195	190-194	190-194	189-195	189-195
Iodine value	120-143	120-141	130-147	130-147	112-143	120-140
Unsaponifiable matter	>1.5	>1.5%	>1.5%	>1.5%	>1.5%	
Acid value or FFA	>0.6	>2.50 >0.02%				 0.02%
Phosphorous		>0.02%				0.02%
Moisture			>0.1	>0.5%		
Rancidity		-ve		-ve	-ve	-ve
Mineral oil		-ve				-ve
Suspended or foreign matter		,,				-ve
Added water or colouring matter		,,				-ve
Other oil			-ve	-ve	-ve	
Peroxide value (meq peroxide oxygen /kg oil)	>10					>10

Table 24. *Vanaspati ghee* (Hydrogenated Vegetable Oil)

Parameters	India	Pakistan	Bangladesh	Sri Lanka	Nepal
BR reading at 60^0 C or RI at 60^0 C	>37 >1,4502	<48	<48		 1.4580
Unsaponifiable matter	>2.0%	>1.5%	>1.25%	>1.25	1.25
FFA or Acid value	>0.25% 6.0	>0.25	>0.25	>0.25	 >0.5
Melting point	31^0C-41^0C	33-37^0C	33-37^0C	31-37^0C	31-41^0C
Moisture	>0.25%	>0.25%	>0.24%	>0.25%	>0.25%
Vitamin A	25 IU	1500IU/lb	1500OV/	7.5µg of ratinol	25 IU
Antioxidant*	+				
Synergist*	+				
Emulsifier*					
Nickel	1.5ppm				1.5 ppm
Peroxide value (meq peroxide/kg oil)	+ve				10
Baudoin test	+ve				
Diacetyl			4 ppm		
Sesame oil	5%	5%			

** prior approval of the government necessary*

Table 25. Olive oil

Parameters	Codex		India	Pakistan	Bangladesh	Sri Lanka	Nepal
	Virgin & refine	*Refined olive*					
BR reading at 40^0 C or RI at 40^0 C	1.4677-1.4705	1.4680-1.4717	53-56 1.4613-1.4032	53-56	53-56	1.4605-1.4680	1.460-1.4630
Saponification value	184-196	182-193	185-196	185-196	185-196	187-195	184-196
Iodine value	75-94	75-92	79-90	79-90	103-128	112-143	54-62
Unsaponifiable matter	>1.5	>3.0%	>1.5%	>1.5%	1.5%	>1.5%	>1.0%
Acid value	V>6.0	>6.0	>6.0	FFA>2%	FFA>2.0%	FFA>1.0%	>6.0
Rancidity		-ve	-ve	-ve	-ve	-ve	-ve
Clear			+	+	+	+	+
Suspended or foreign matter			-ve	-ve	-ve	-ve	-ve
Mineral oil			-ve	-ve	-ve	-ve	-ve
Moisture						>0.5%	
Other fat				-ve	-ve	-ve	
Peroxide value(meq peroxide oxygen/kg oil)	<20,R< 10						>20

Table 26. Sesame seed oil

Parameters	Codex		India	Pakistan	Bangladesh	Sri Lanka	Nepal
BR reading at 40^0 C or RI at 40^0 C	1.465-1.469	60.5 -65.4 1.4662-1.4694	58-61 1.4646-1.4665	58-61	58-61	1.4650-1.4690	1.4600-1.4653
Saponification value	187-195	105-190	188-193	188-193	188-193	187-195	187-195
Iodine value	104-120	115-120	103-120	105-115	105-115	104-120	104-120
Unsaponifiable matter	>2.0%	>2.5%	>1.5%	>1.5%	>1.5%	>2.0%	2.0%
Acid value or FFA	>4(V)	>6 -	>6 -	>2.0%	>2.0%	>3.0%	>6.0
Rancidity		-ve	-ve	-ve	-ve		1.2%
Clear				+	+		+
Mineral oil		-ve	-ve	-ve	-ve	-ve	-ve
Moisture						>0.5%	
Suspended or foreign matter		-ve	-ve	-ve	-ve	-ve	-ve
Mineral oil		-ve	-ve	-ve	-ve	-ve	-ve
Other fat							
Peroxide value (meq peroxide oxygen/kg oil)	>10						>10
Bellier test		$>22^0$C	$>22^0$C				
Baudoin test				+ve	+ve		+ve

Issues for comments

- How can the food safety data be exchanged amongst member countries of the region for developing intervention strategies?
- How can the regional project on SPS issues be developed for expanding capacity in food safety and quality?
- Taking into cognisance of geo-climatic and cultural practices, it is of utmost importance to establish regional limits for contamination.

CHAPTER – VII

COUNTRY EXPERIENCES IN SPS IMPLEMENTATION

- Bangladesh, India, Maldives, Pakistan and Sri Lanka are already the members of WTO. Nepal is in the process of accession to WTO and Bhutan has also taken initiation for membership.

Most of the SAARC countries need to harmonise their regulations, inspection procedure and analytical capabilities in line of Codex principles, guidelines and recommendations

- Legislation on food safety, plant and animal health are already in operation in all the SAARC countries except in Maldives. Bhutan has yet to develop food legislation and plant health legislation. Fishery regulation is in progress in Maldives.

- The countries of the SAARC region have joined CAC and OIE except Maldives. Bhutan, Maldives and Nepal are yet to ratify IPPC.

- All countries of the SAARC region are committed to upgrade existing legislation to comply with WTO's SPS requirements.

- The SAARC countries experience need of technical assistance in terms of their capacity building for Human Resource Development (HRD), and infrastructures, and even some countries of the region need Technical Assistance for updating existing legislation to comply with SPS/TBT requirements.

- Most countries of the region find difficulties to export their products mainly because of the higher standard of the developed countries.

- Inadequate pace of harmonisation of standards, inspection approach, and analytical data generation at the SAARC regional level.

- Inadequate resource allocation in SPS activities due to lack of public awareness.

- Lack of participation in CAC, OIE, and IPPC activities and, no use of regional data in the international standard setting process.

- Inadequate flow and exchange of information on SPS matter at regional level.

- Lack of referral laboratories for SPS related services and no regional fund generation for assuring health of the people, plant and animal.

Issues for comments

- How can SAARC be activated to create SAARC Network on food safety?

- How can the regional capacity on food safety be enhanced to meet SPS criteria?

- How Referral Laboratories can expedite SPS requirement in trade?

CHAPTER – VIII

ISSUES AND CONSTRAINTS

- Lack of harmonisation in procedures, mechanisms and standards.
- Inadequate capacity to comply with stringent measures in risk assessment.
- Lack of regional capacity to generate regional exposure data for chemicals, pesticide residues, mycotoxins, heavy metals, veterinary drug residues, and microbiological risk etc.
- Prevalence of high compliance cost in the exports of shrimp and marine products owing to the quality requirements of the importing country.
- Small farm sizes and enterprises make difficulties in meeting the SPS requirements.
- Inadequate existing facilities for quality testing, certification, and accreditation.
- Lack of legal consistency.
- Inadequate supply of information, (laws, notification, and standards etc).
- High input cost for food production.
- Lack of regional initiatives on SPS matters.

Small farm sizes and enterprises make difficulties in meeting the SPS requirements in the SAARC region. Moreover, lack of regional capacity to generate regional exposure data for chemicals, pesticide residues, etc. has become a major concern

Issues for comments

- How will regional approach in risk analysis be executed?
- How will SAARC be activated to focus on SPS issues in terms of contaminants, such as pesticides, mycotoxins, heavy metals, veterinary drug residues and microbiological hazards?
- What is the extent of economic losses caused by non-compliance of rigid food standards?

CHAPTER – VIII

RECOMMENDATIONS

- Reviewing and updating of existing legislation in line with WTO's SPS / TBT Agreements.

- Harmonisation of regulations at the regional level taking account of CAC, OIE and IPPC principles, guidelines, and recommendations.

The SAARC countries should expedite the process of regional harmonisation by institutionalising the SAARC Regional Network for Food Safety and should take initiative in building up regional capacity in SPS/TBT related matters

- The SAARC countries should expedite the process of regional harmonisation by institutionalising the SAARC Regional Network for Food Safety and should take initiative in building up regional capacity in SPS/TBT related matters.

- Capacity building in standard formulation procedure and risk assessment, considering regional exposure data to reveal in Codex work.

- Strengthening of infrastructure for SPS requirements (Inspection, Testing, Certification, Method Validation, Equivalence Mutual Recognition of Laboratory Services SPS related Information and Biotechnology etc).

- Establishment of Regional Referral Laboratory System to provide competent services in the region.

- Development of human resources for Import/ Export Inspection, Certification, Accreditation, and Food Analysis.

- There is a need for National Food Control Authority at the apex level for the facilitation of standard formulation, food contaminants, adulteration, and pollution.

- There is a need to develop special packages for Food Control Management including Food Inspection, Research on Food Contaminants, GMP, HACCP and generation of Food Analytical data base and their interpretation.

- Food Control Services of the SAARC region are in urgent need of strengthening laboratory services with modern equipment such as Gas Liquid Chromatography (GLC), High Performance Liquid Chromatography (HPLC), Atomic Absorption Sectrophotometer (AAS), Ultra Violate/Infra-Red (UV/IR) spectroscopy etc. to cope with emerging problems on food trade involving SPS/TBT requirements.

Member countries need to initiate preventive and pro-active quality management system of the food chain by introducing code of good practices for promoting safe food supplies

- Member countries need to initiate preventive and pro-active quality management system of the food chain including processing industries, handling, transportation, and distribution by introducing code of good practices for augmenting safe food supplies.

- Member countries are urged to develop and establish information database for the exchange of information and make resource sharing for such network.

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