EDITIONAL

From the SPS standpoint, the last three months have been quite productive as several prominent steps have been taken in Pakistan, both at national and provincial levels to address eliminating sanitary and phytosanitary obstacles to trade barriers which have emerged as a consequence to “Agreement on the Application of Sanitary and Phytosanitary Measures”. This Agreement, which comes under the WTO, sets constraints on member-states’ measures relating to food safety per se, (for example bacterial contaminants, pesticides, inspection and labeling) as well as animal and plant health (phytosanitary) measures with respect to imported pests and diseases. A most notable development in this regard is perhaps the creation of a full-fledged Ministry of Food Security and Research at the Federal level remaining, however, within the ambit of constitutional provisions of Federal Legislative List (FLL). One of the stated objectives of this creation is to spearhead the role of agriculture in the exports of Pakistan by ensuring improved compliance with sanitary and phytosanitary measures. The newly created Ministry is mandated to consider the security of provision of food as core function of the State, and to support associated research. The creation of the Ministry was as a direct result of the restructuring of Federal Government following the passage of 18th amendment to the constitution of Pakistan, which orchestrated the devolution of the Federal Ministry of Food and Agriculture and its transference of agricultural functions to Provincial Governments. This in turn, was bound to have serious repercussions on food security, international co-operation and agriculture research, as the most provinces (except Punjab) do not have complete agricultural infrastructure in these respects. Concomitant to these changes, Government of the Punjab has created a pioneering autonomous food authority (the Punjab Food Safety and Standards Authority - PFSA). This has stepped ahead by signing a MOU with the EU-Funded TRTA II Programme that clearly fosters strengthening of food safety controls undertaken by the PFSA, particularly with special reference to controls applied in the export supply chain. During the duration of its implementation the Programme undertakes to consider requests for support from the Authority in relation to technical assistance for; revision of regulations and rules regarding food safety; strengthening food safety inspection systems and procedures; technical training of food safety officers; upgrading of laboratory systems to international standards and; supply of equipment for inspectors.

The third important strategic development with regard to capacity building of institutes and organization working within the ambit of SPS policy framework and its implementation across Pakistan, was that 9 senior level delegates from relevant Ministries and government bodies undertook a study tour to the EU. Participants included senior officials from NAPHIS and Ministry of Commerce, Food Department Government of Punjab and Fisheries Department Government of Baluchistan interacted with food safety and SPS management agencies in the UK and DG SANCO (Brussels). One delegate also attended the World Seafood Congress in USA. The study tours were organized and financially supported by EU funded TRTA II programme implemented by UNIDO, and enabled participants to observe the best international practices and discuss their implementation in Pakistan. The results of the study tour will be directly applied in the design of future federal legislation on sanitary and phytosanitary controls and the institutional arrangements for implementation, being promoted by the NAPHIS Project. Given the current state of affairs, the way now appears to be open for the enactment of the proposed new legislation, in the form of a Bill to establish the National Food Safety, Animal and Plant Health Regulatory Authority.

The Component 2 of the TRTA II programme sponsors this SPS Newsletter with a purpose to create awareness among key stakeholders – government officials, business and civil society actors – in pertinent areas of standards and quality control such as EU and WTO requirements on sanitary and phytosanitary (SPS) measures. The Newsletter invites articles of interest, particularly encouraging young writers to contribute, for the cause of promotion of better understanding of SPS as it implies to the common interest of consumers.

SUMMARY

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✧ The Code of Practice for Fish and Fishery Products (CAC/RCP 52- 2003) in the context of national fisheries in Pakistan
✧ TRTA II Programme supports SPS Study tour to the UK and Belgium
✧ Punjab Pure Food Rules Reviewed

The views expressed in this publication do not necessarily reflect the views of the European Union
Survival and distribution of Aflatoxin M₁ in processed milk and milk products

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The term mycotoxin is derived from the Greek word “Mykes” meaning mould and the Latin word “Toxicum” meaning toxic. Mycotoxins are toxic compounds produced from various Genera of microfungi affecting most grain crops, some fruits, vegetables and herbs, and some nuts and legumes. Mycotoxin producing moulds include Aspergillus, Pencillium, Fusarium, and Alternaria. These moulds are capable of producing Aflatoxins, Fusarium toxins, Trichothecenes, Patulins, Ochratoxins and Zearealenone. Many of the mycotoxins have adverse effects on the health of humans and animals that consume mould infected foods.

The aflatoxins (AF) are a group of toxic and carcinogenic secondary metabolites, which are produced by strains of Aspergillus flavus, Aspergillus parasiticus, Aspergillus nomius and Aspergillus pseudotamarii. The International Agency for Research on Cancer (IARC) has classified aflatoxin B₁ (AFB₁) as a group I carcinogen, primarily affecting liver. AF is found as contaminants in various agricultural commodities such as cereals, nuts and spices. Among 18 different types of aflatoxins identified, major members are aflatoxins B₁, B₂, G₁, G₂, M₁ and M₂. Aflatoxin B₁ is produced most abundantly and is also most toxic followed by G₁, B₂ and G₂.

Aflatoxin M₁ (AFM₁) is a metabolite of aflatoxin B₁ (AFB₁) and can be found in milk and subsequently in other dairy products when lactating animals are fed with contaminated feedstuffs. Mammals that ingest aflatoxin B₁ (AFB₁) – contaminated diets excrete a metabolite known as aflatoxin M₁ in milk. This toxin has been recognized by IARC as a class 2B toxin, a possible human carcinogen.

The presence of AFM₁ indicates a potential risk since milk is a major constituent of human diet. Infants usually use pasteurized milk after breast weaning, up to three years of age as the main food, so the problem seems to be more important in this age group. In addition, milk is not only consumed as liquid milk, but also utilized for the preparation of infant formula, yogurt, cheese and milk based confectioneries including chocolate and pastry. Its production and promotion should not be underestimated or neglected due to the unpredictable environmental and climatic conditions, inadequacy or incompetency of the agricultural systems to manage aflatoxin contamination (for example by the application of HACCP principles), poor economic conditions and lack of knowledge. Carry-over rate studies have shown that cows ingesting about 40 µg/head/day of AFB₁ produce milk with an AFM₁ content of approximately 0.05 µg/kg. However a tolerable daily intake of 0.2 ng/kg of body weight for AFM₁ has been calculated.

Survival in milk products

The most noticeable fact about the aflatoxin is that they are quite resistant to heat. Heat treatments like pasteurization and sterilization do not cause an appreciable change in the amount of AFM₁ in milk and milk products. Milk retains AFM₁ even after UHT treatment. Similarly storage of frozen contaminated milk and other dairy products for a few months does not appear to affect their content of AFM₁. Since AFM₁ is predominantly associated with casein, concentration of AFM₁ is about 3-5 times higher in cheese than in milk. The solubility of AFM₁ in the aqueous phase and adsorption to casein causes a very small proportion of AFM₁ to be carried over to cream and butter. The remaining stays in skim milk and butter milk.

Large losses of AFM₁ may occur in concentrated and dried milk as partial or complete removal of water leads to concentration of milk solids and contaminants like AFM₁ which may make it more susceptible to oxygen, light and other destabilizing factors. There is also a significant decrease in the AFM₁ content of cultured dairy products.

Risk factor analysis

The most effective way of controlling aflatoxin M₁ in the food supply is to reduce contamination with aflatoxin B₁ of raw materials and feedstuffs for cattle. Preventive measures must be taken to reduce fungal growth and aflatoxin B₁ formation in agricultural commodities intended for use as animal feed.

Occurrence of aflatoxin M₁ in milk in various cities of Pakistan

In a study conducted by Khushi Muhammad et al., (2010), 81% samples of raw milk collected from different town of Lahore were found to contain AFM₁ levels exceeding the American and European limits. In another study performed in 2006 by Rashid Raza, in Karachi about 25% of the fresh milk samples were found contaminated and exceeded the defined limits. The high cost of feed encourages dairy farmers in Pakistan to use old bread in the cattle diets.

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As a result 493 animals died in Karachi’s Landhi Cattle Colony in November 2010. More than 1,200 animals fell sick. A recently released report by the Pakistan Council of Scientific and Industrial Research (PCSIR) has concluded that deaths were caused by a high concentration of aflatoxin in cattle feed.

The contamination of liquid milk and its products in our country is therefore probably caused by the use of contaminated feed for our cattle. There is a need for prompt efforts for improved regulatory controls on animal feeds and a regular inspection of conditions in the feed supply chain by the relevant authorities at Federal and Provincial Government. This improved regulatory approach should be supported by improved training of the personnel, and implementation of good agricultural practices, good manufacturing practices and good storage practices.

The Code of Practice for Fish and Fishery Products (CAC/RCP 52-2003) in the context of national fisheries in Pakistan

The Codex Alimentations Commission (CAC) constituted by FAO, is a multi-country body responsible for food standards that serve as a reference for international food trade as well as domestic trade. Presently, more than 180 countries are members of the CAC and more than 200 international NGOs and intergovernmental organizations have the observer status. The World Trade Organization Agreement on the application of Sanitary and Phytosanitary Measures (SPS Agreement) considers that WTO members applying the Codex Alimentarius Standards meet their obligations under this Agreement. Pakistan as a signatory to WTO is also bound to recognize the validity of recommendations made by the CAC.

Codex Alimentarius’ primary objective is to protect the health of consumers, to ensure fair practices in international food trade and to promote the coordination of all food standards work undertaken by international governmental and non-governmental organizations.

The Code of Practice for fish and fishery products i.e. CAC/RCP 52-2003 has recently been substantially revised by the Codex Committee on Fish and Fishery products by merging of a number of previously existing codes. This code now also includes a comprehensive section (section 6) covering aquaculture in which two important subsections are “Identification of hazards and defects” and “product operations”. Another new section (section 9) has been added on frozen surimi. In total there are 18 sections of which the first section pertains to definitions of the common terms used in present day fish and fishery product, including both capture and culture based fisheries.

The second section covers prerequisite programme which addresses fishing and harvesting vessel design and construction, facility design and construction, design and construction of equipment and utensils, hygiene control, transportation traceability and training. The third section deals with general consideration for the handling of fresh fish, shellfish, and other aquatic invertebrates. The rest of the sections deal individually with specific commodity, such as processing of; fresh, frozen and minced fish; quick frozen fish products; salted and dried salted fish; smoked fish; lobsters; crabs; shrimps and prawns; cephalopods and; canned fish and shellfish. There is also a section on transportation standards and a final section on “Retail” covering issues such as reception of fish/shellfish at retail.

Primarily, these codes were of technical nature, designed to give advice on the production, storage and handling of fish and related products both on board and on landing sites and onward. However, the scope has now been broadened to deal with distribution and retail display of fish and its allied products as well. Similarly, the HACCP approach defined in the latest version of code is supported with system guidelines as well. Supporting further, the HACCP issue, a guide line is provided to ensure hygienic production of fish and related products essentially to encompass the safety related issues.

The Committee on Fish & Fishery Products (CCFP) has established working groups for (1) Proposed Draft Revision of the Procedure for the inclusion of Additional Species in Standards for Fish and Fishery Products; (2) a discussion paper on Public Health Risk of Histamine from Fish and Fishery Products; (3) Screening methods for the proposed Draft List of Biotoxins in the Standard for Live and Raw Bivalve Molluscs; and (4) Proposed Food Additives Provisions in Standards for Fish and Fishery Products with a mandate to align with (and propose any necessary changes) the General Standard for Food Additives (GSFA).
The Codex Alimentarius Commission adopts standards, codes of practices and other related texts that are prepared by specialized Codex Committees and Ad hoc Task Forces. The role of the member countries in this process of adoption of CAC Standards and Codes of Practice is clearly demonstrated by citing the example of Europe. The 27 Member States of the European Union are all members of the Codex Alimentarius Commission. In 2003, the European Community (now the EU) also became a full member of the Codex Alimentarius Commission and shares the competence with its Member States on the basis of the level of harmonization of the relevant legislation. Since the entry into force of the Treaty of Lisbon on 1 December 2009 the European Union replaced the European Community. The EU and its Member States review draft proposals from the Codex Alimentarius Commission, the various Codex Committees and Task Forces, they assess their validity and impact, and then elaborate EU position papers on issues of concern.

The Commission holds regular meetings inviting member countries for giving their inputs on the agenda item and for which a permanent office of the Secretary, Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme has been established in the FAO Headquarters in Rome, Italy. Pakistan is one of the members of this Committee and thus invited to attend and participate in all its proceedings. The countries independently participate in these meetings to guard their national interests, in addition to making technical contributions as and where needed. The meeting takes account of things like technical validity of the document in question, to make sure that it is in line with the Codex Alimentarius approach (for example in based on risk analysis activities). The Committee is empowered to constitute a Task Force which could suggest not only to harmonize the language but also to frame the technical approach.

Development of the Pakistan technical regulations in relation to food safety is necessary to ensure harmonization of requirements governing safety of food products consigned to market. It is envisaged that through better compliance with Codex requirements, will help to reduce trade barriers by ensuring products gain access to markets and are not rejected by health authorities. Whilst present activities of the Federal Competent Authority for sanitary control of fishery products (the Marine Fisheries Department) are focused of gaining access to the EU market, there is also a need to implement improved sanitary controls for all markets (regional and international exports, as well as domestic). This ensures that all consumers obtain their rights to safe food, and that operators who invest in facilities with improved standards of sanitation and quality, are not undermined by non-compliant operators who sustain lower costs. A strengthened and higher profile engagement by Pakistan in the Codex Alimentarius activities and the development of appropriate controls based on Codex, is therefore clearly in the national interest and is being strongly promoted by the Ministry of Trade and the TRTA II Programme.

**TRTA II Programme supports SPS Study tour to the UK and Belgium**

Pakistan is currently seeking to strengthen its management of sanitary and phytosanitary control systems, with the objective of a) meeting WTO commitments and b) improving compliance of exports with standards set by international trade partners. To further develop the capacity for SPS policy decision making and subsequent systems management, the TRTA Programme arranged a study tour to the European Union by senior officials to study best international practices in the design and implementation of an SPS control system.

The participants were selected from senior officials (at Director General/Secretary level) and came from the National Animal and Plant Health Inspection Service (NAPHIS), Ministry of Commerce, Fisheries Department (Government of Baluchistan), Food Department, (Government of Punjab) and Health Department (Government of Kyber Pakhtunkhwa)

The study tour visited the UK (London and York) and Belgium (Brussels) during the period 13-26 November 2011. SPS controls were reviewed in the two EU Member States (UK and Belgium), and in Brussels a full day was spent with officials from the European Commission DG SANCO and the European Food Safety Authority.
Sanitary and Phytosanitary (SPS) - Pakistan

A quarterly Newsletter published by Trade Related Technical Assistance (TRTA II) Programme

In London visits and discussions were held with the Food Standards Agency UK (Food safety system level overview of organisation structures and functions), Animal Health and Veterinary Laboratories Agency and Veterinary Medicines Directorate of the Department for the Environment, Food and Rural Affairs (review of animal health zone controls and residue monitoring of veterinary drugs). A visit was also held to Marks and Spencers, to better understand how a major retail operation addressed food safety. Participants visited a major meat wholesale market, and saw meat inspection and market controls, and then visited Tilbury docks, one the UK’s major ports of import of foods of animal origin, to observe the implementation of the EU’s border inspection pots functions. The team travelled to the North of England to visit York, where they reviewed the UK’s central meat inspection functions undertaken by the Food Standards Agency, and also reviewed the domestic controls implemented by York City Council. In York the group also spent time learning about pesticide controls with the UK’s Chemical Regulations Directorate of the Health and Safety Executive. A social programme was hosted by the Lord Mayor of York, who kindly also gave a tour of the historic Mansion House of this ancient city.

Back in London, the team visited the Laboratory of the Government Chemist, to review the work of the UK’s main reference laboratory for chemical safety of foods, and spent an afternoon with the Chartered Institute of Environmental Health, discussing the professional development of food safety staff in Pakistan, and the potential role of the Institute in validation of Pakistani qualifications. The following week the study tour travelled to Brussels to meet the European Commission, who gave a full day of presentations regarding the EU’s approach to food safety, animal health and plant health, and set out the way in which the EU applies these controls to imports from third countries such as Pakistan. Whilst in Brussels the tour also visited the EU Office of the World Animal Health Organisation, to learn how Pakistan can benefit from the services which are offered by this UN mandated organisation. A very interesting presentation was also made by the Belgian Federal Agency for the Safety of the Food Chain, which set out all of the arguments and approaches to the creation of a unitary food safety agency, allowing the participants to draw some significant lessons to be applied in Pakistan, where the TRTA programme is supporting the Federal Government to implement a similar approach.

Throughout the tour there were active discussions with all of the hosts, who frequently commented on the high level of interest and challenging questions posed by the participants. The participants were highly motivated by the tour, which has helped them to develop a new vision of the SPS function and how it should be applied in Pakistan. The challenge now is to consolidate the results, and ensure that they are more widely disseminated and applied in Pakistan. To this end the TRTA project will in the near future support a number of dissemination workshops in different regions of Pakistan, where other SPS professionals will have the opportunity to hear first hand about the lessons learnt, and to discuss how to apply them in their future control activities.

There are major parallels between the European model (European Commission/EFSA and Member States) and the evolution of the Pakistani model post-18th Amendment of the Constitution (Federal Government – Provincial Government). The consultants took the frequent opportunities presented to point out the relevance of the lessons to the development of the Pakistani SPS control system. The visits also helped to establish a relationship on SPS matters between the parties in this respect. In general, apart from the non-attendance at 20% of the sessions, the participants who were present showed a high level of interest and motivation towards the subject of the study tour. All hosts commented on the quality of the challenging and penetrating questions asked by the group. The International Consultants considered that there were some genuine new insights developed by the members of the group (in particular the message that controls along the supply chain requires a change of focus away from the product to the process).

The study tour visits provided the following features:

- A clear central/regional structure of Government, with formal, legally based division of SPS responsibilities between them.
- Fully updated modern, effective and efficient SPS legal framework with unitary central level responsibilities for animal health, plant health and food safety
- Operational features of an integrated external border controls for controls on agro-food products
- Functional national risk assessment mechanisms in food safety, plant and animal health, able to demonstrate how risk assessment informs management decisions.
- Pakistan is currently addressing deficiencies identified by DG SANCO in 2007 in the sanitary controls applied in the export of fishery products to the EU. Significant progress is being made with a view to submission of guarantees later in 2011.
- The EU supports the strengthening of the SPS area in Pakistan through the TRTAII PACE Programme (Poverty Alleviation through Competitive Exports). The EU is an important market, with considerable development potential for Pakistani agro-food products. An effective communication between the control authorities in this market (both EU and national) is vital if Pakistan is to address any future difficulties in compliance.

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A comprehensive exercise was carried out by a committee of experts and intellectuals constituted by Health Department, Government of Punjab to revise The West Pakistan Pure Food Rules, 1965. It took many years to committee to finalize and prepare a consensus document, which was notified and released by Health Department, Govt. of Punjab as The Punjab Pure Food Rules 2007. After the notification there arose some observations especially from Lahore Chamber of Commerce & Industries (LCCI). Although the committee worked very hard to finalize the rules, some of these observations were justified mainly due to the following reasons:

1. These rules were revised after very long time (after 42 years), so obviously there were chances of deficiencies
2. There has been a massive evidence based research findings in last three- four decades in food safety and food product development and the rules should incorporate all those scientific evidences to safeguard consumer and consumer interests
3. This is an era of WTO and the rules, of course, should be revised in accordance with the international laws and treaties so that they must not present trade related technical barriers
4. Due to rapid increase in food products developed and marketed every year, the rules should also be devised to cover all the products in the market

Therefore, a committee of experts was constituted by the Health Department to address the observations of LCCI and make amendments, revisions and/or devise new rules, where necessary. Prof. Dr. Riwan Musaffar was the convener of the committee. All the meetings of the committee were also attended by the representatives of Lahore Chamber of Commerce & Industries. The committee worked very hard to achieve a consensus document. The committee agreed to incorporate many amendments along with new rules. The document “The Punjab Pure Food Rules 2011” has been vetted by Law department and is in final stages of approval.

This again very important exercise carried out by Punjab province as it might also serve as document to be replicated or to serve as guideline for them to prepare their own rules.

The salient features of some proposed amendments and new rules are as follows:

- It was agreed that codex standards (Codex INS No) for food colors and additives be incorporated in Pure food Rules 2011
- Only specified additives or mixture thereof and as per Codex and E.U approved are allowed to be used in the preparation of any food
- Maximum limit of additives: Codex list of permitted food additives along with its limit and any updates in Codex were incorporated
- New definition and description of food preservative in conformity with international standards was proposed
- The license No.: It was agreed that label of pre packed food shall bear license Number which must be renewed every year
- Maximum number/ upper limits of pathogenic microbes, contaminants and chemical additive in various foods were reset according to international standards and to ensure food safety
- Maximum and minimum content of nutrients various food products like standardized milk, flavored milk, yoghurt, various nectars etc. was changed
- Nomenclature of some foods was changed to make the name of the products more representative of the product enclosed and to avoid misleading by producers
- New additions were also made like liquid tea whitener, powder tea whitener, follow up formula, formula for special medical purposes etc

Keeping in view the composition of human milk, indigenous nutrient requirements of infants and the national interest, the technical committee comprehensively revised standards for infant foods. The salient features are as under:

- Standards for essential composition were set in such a way to ensure close conformity with human milk
- Only milk protein was allowed to be incorporated in the formula
- Minimum whey to casein ratio has been fixed to ensure maximum protein availability and digestibility. Minimum concentrations of all essential and semi-essential amino acids were also fixed to ensure quality. Addition of amino acids was prohibited except to only improve protein quality by adding L-form of essential amino acids
- The range for essential fatty acids and maximum level of saturated fatty acids was defined in the standard. Commercially hydrogenated fats and the same used for commercial hydrogenation were restricted in infant formula. Plant oils and fats to be added must be virtually tans fat free
An important development was the amendment of the rules with regard to appointment of food inspectors. The qualification of person to be appointed as a food inspector was made more specific. Only persons having related professional education of not less than 16 years will be eligible for employment as food inspectors. The proposal was also furnished to improve the grade of Food Inspector and to increase the number of Food Inspectors in the province.

The revised Pure Food Rules set out a modern set of requirements for foods which take into account Codex requirements. Future development of the Punjab food safety control system will therefore be able to build on this important first step. In this respect, it should also be noted that a new Federal approach to food safety is being developed within the frame of planned launch of the Federal Food Safety, Animal and Plant Health Authority. This will be mandated to ensure that food safety controls applied in international and inter-provincial trade are in line with requirements of the Codex Alimentarius Commission and will support provincial authorities in meeting this important goal.

About TRTA II

The TRTAII Programme is funded by the European Union and implemented by UNIDO. The overall objective of the programme is to contribute to poverty reduction and sustainable development in Pakistan. The programme activities are to be implemented through three components:

Component 1: Trade policy capacity building; the expected result is increased relevance and effectiveness of trade policy
Component 2: Export development through improvement of quality infrastructure; the expected result is improved compliance of export products with market requirements
Component 3: Strengthening of the intellectual property rights system; the expected result is a modernized IP system that facilitates increased investment and trade in IP protected goods and services

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