UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

**THE INTEGRATED PROGRAM FOR LEBANON
TO ENHANCE THE COMPETITIVENESS OF THE LEBANESE INDUSTRY
AND ITS INTEGRATION IN THE GLOBAL MARKET**

EMERGENCY ASSISTANCE TO FOOD INDUSTRY

**Food Safety Panel
Progress Report**

Beirut, Lebanon
December 2002

Outline

Introduction

I. Objectives of the Initiative

The consumption of safe and nutritious food is the major contributor to good health. Traditionally, people ate most of their meals at home. However, due to changing lifestyles and increasing demands at the work place, more people are consuming foods outside their homes. That is processed foods, fast foods and street foods; in places such as restaurants, sandwich shops, cafes, schools, hotels, and many other food service establishments. Moreover, our local food industry is not only serving the local market, but has increasingly made good strides towards the export market, an important element of the Economy of the country.

Let us say it in simple words: **How safe are our foods?** Whether locally consumed or exported? Nothing can harm the food industry more than the reputation of unsafe food products, and the detention of exported foods.

The Question is: Where are we today as far as food safety control in Lebanon. This is the subject of our meeting this morning.

Among the many good efforts of different International organizations, UNIDO, with the efforts of Mr. Papuli and UNIDO's headquarters in Vienna, organized a comprehensive two days workshop in June 14, 2001 at USJ on "**FOOD SAFETY IN LEBANON-Enhancing the system to meet international requirements."**

Finding the urgent and compelling need to follow up on the recommendations, UNIDO under the directorship of UNIDO consultant, Mr. Karl Schebesta, proposed the formation of a **Food Safety Panel** composed of the coordinators of the workshop sessions. The main task of the Panel is to come up with recommendations for a workable system and structure of a Lebanese Food Safety System. This is to be based on supporting the

Governmental Authorities concerned with food safety, and coordinating their efforts in this regard.

The Panel is composed of professionals mainly from major universities in Lebanon, namely, the Lebanese University, St. Joseph University and the American University of Beirut. In addition, to representatives from the related Ministries, those are Ministry of Economy and Trade, Ministry of Industry, Ministry of Health, Ministry of Agriculture, Ministry of Tourism, Ministry of Defense (Lebanese Army), and Ministry of Environment. The Panel also includes representatives from FAO, WHO, Syndicate of Lebanese Food Industrialists, Syndicate of Restaurants, LIBNOR, Industrial Research Institute, and NGO's such as consumers Lebanon.

The Academia Professors are:

1. Dr. Hussein Deeb

Prof. of Food Science and Technology

Lebanese University

2. Dr. Toufik Rizk

Prof. of Chemistry

St. Joseph University

3. Dr. May Jurdi

Prof. of Environmental Health

AUB

4. Dr. Raja Tannous

Prof. of Food Technology and Nutrition

AUB

5. Mrs. Raghida Hossary

Course Director

School of Public Health Inspectors

And Coordinator of the Panel, Mr. Bassel Al Khatib,

UNIDO National Consultant on Food Safety

II. Plan of Work

The plan of work of the Panel focused at first on collecting data, information and opinions of all major stakeholders involved in food safety.

For this purpose, the Panel held numerous separate meetings with stakeholders through their representatives. These Meetings, coordinated by Mr. Bassel Al Khatib, were held with representatives of the following stakeholders:

- Ministry of Agriculture
- Ministry of Economy and Trade
- Ministry of Industry
- Ministry of Public Health
- Syndicate of Lebanese Food Industrialists
- Syndicate of Restaurants, cafes and nightclubs.
- LIBNOR
- Representatives from U.N. agencies, FAO and WHO
- Representatives from EU.
- Representatives from major public and private laboratories in Lebanon
- Lebanese Association of Food Scientists and Technologists
- Experts and professors involved in risk assessment and management
- Others

III. Specific Tasks of the Panel

The food Safety Panel from the beginning committed itself to the following tasks:

1. Studying the Lebanese food laws and regulations and the existing food inspection efforts in Lebanon. As every one realizes, the Basic Framework of Food Safety Legislation should be coupled with Inspection and Compliance Monitoring.

2. Gathering as much as possible information from the concerned government Ministries, on their specific regulations and their specific role in the food safety control system. To accomplish this tedious work, the panel was assisted by four

graduate students, Miss Margueritta Eid and Mr. Charbel Afif from USJ and Misses Karma Arnaout and Maya Rbeiz from AUB.

3. Gathering information on Risk Assessment and Risk Management in Lebanon, from governmental sources and others such as hospitals, professional societies, experts and University professors.

4. Studying the governmental organizations and the operating food safety and inspection systems adopted by countries of the European Union, Canada, Australia, etc, to learn from their experience.

5. Assisting the food industry in Lebanon to overcome the hygienic and safety problems.

6. Formulating recommendations, by sharing and in coordination with stakeholders, for an applicable, modern, and improved food safety system for Lebanon, a system that can continuously be updated and is able to keep pace with a changing world.

7. Establishing a Lebanese Food Risk and Hazard database.

8. Preparing for training programs at the different levels of the food chain.

9. Increasing Food Safety Public Awareness in Lebanon.

IV. Preliminary Findings

Preliminary major findings reached by the food safety panel at this stage include:

- Food laws and regulations are far from being complete or up to date, and thus need extensive amount of work to become a modern document worthy of the country.

- Although every ministry in the government has a certain mandate in dealing with food safety issues, there is lack in coordination among the different bodies, with sometimes overlap in duties, and almost completely confusing to the consumer and industrialists as to who should do what, when and how

- Food Safety practices are not being applied in many food factories.

- An effective and functioning Food Inspection and Compliance Monitoring System is almost completely absent, from the food safety point of view.

This morning we would like to present to you a progress report about our work, and some observations on our findings, and a glimpse about our intended future work.

Comments and Proposals on the Existing Lebanese Food Safety System

I. Introduction

The need to implement a reliable Food Inspection and Food Assurance System, meeting international requirements, has evolved over the last year. It should be noted that while a number of sporadic food – borne disease episodes occur daily, few are registered by national authorities. Besides the direct health consequences, such problems impose substantial stress on the health-care system, and reduce economical output as a result of loss of confidence in the safety and integrity of food production and supply. This confidence is a vital need for consumers and an important requirement for European and International trade in food. Recently, a series of food safety alerts, from European countries (Sweden, Spain, …) have been instrumental in eroding confidence in Lebanese food. These alerts will have serious global repercussions if urgent attention is not given to our situation in the matter of food control. It will reduce public confidence concerning the general operation of our national food control system which is meant to protect consumers from unsafe and adulterated food and to provide adequate safeguards for public health..

On the other hand, Lebanese consumers are taking unprecedented interest in the way food is produced, processed and marketed. They are calling upon the industry and the national authorities to accept greater responsibility for food safety and consumer protection.

II. Issues for Consideration

The problems of food safety and quality are multidisciplinary in nature. Moreover, our situation in this matter is critical (findings and conclusions from the report of Mr. K. Schebesta and Mr. Bassel Al Khatib, May – June 2001, UNIDO). On the other hand, at governmental level, many jurisdictions depending upon the constitutional powers of various Ministries and many activities have been undertaken to determine suitable approaches which would enhance the quality and safety of the food system, increase

consumer protection, and assist in promoting trade in food. The result is a loss of confidence in the safety and integrity of the Lebanese Food System.

The Food Safety Panel, after a year of deliberation on this subject, brought forward several basic principles and issues that should underpin the design and operation of the Lebanese National Food Control System (LNFCS), to ensure food safety and consumer protection. These issues are summarized as follows:

- Hazard Analysis Critical Control Point System (HACCP) :

    An important approach that can be applied to all stages of production, processing and handling of food products is HACCP. Now, local industry recognizes the HACCP as the fundamental tool for improving the safety of food and providing a better scientific means of identifying and analyzing food hazards in the operational process.

- Risk Analysis :

    A food control system should rely on scientific principles and on the assessment of the risk to human health. It is widely defined as a process consisting of three parameters. 1) Risk assessment (hazard identification, hazard characterization, risk characterization); 2) Risk management (selecting and implementing appropriate control options and regulatory measures); 3) Risk communication (the exchange of information between all parties, about risks)

- Transparency based on stakeholder participation:

The involvement of stakeholders is required and they are allowed to make effective contributions. This participation will provide a mechanism for interactive exchange of information and encourage collaboration among all concerned stakeholders. The involvement of stakeholders contributes to the enhancement of consumer confidence in the integrity of our food supply, and facilitates the risk management process. This confidence is an essential outcome of a successful food policy. Effective communication requires that all interested parties have equal access to information and the ability to influence the process.

Who are the stakeholders? The audiences may include the general public, scientists, the media, consumer and industry representatives, public health professionals, regulators, NGO's , restaurant syndicates, friends of the panel, publications, regulatory agencies, and public meetings.

- Street food:

The effective application of a National Food Safety System framework requires knowledge of current food safety problems and their magnitude. One of the major problems is the hygiene status of street foods in our country. The government should be aware of the problems to be solved, in order to implement intervention measures. At that stage, it is appropriate to 1) improve environmental facilities by assigning special sites for vendors and providing water, electricity, etc…, 2) strengthening the training of food vendors and food handlers. 3) carry out studies on high risk foods (application of HACCP in the cooked meat business)

- From farm to final consumer concept:

It is required that safety must be embodied in food products from production through consumption. This means that producers, processor, transporters, vendors and consumers all play vital roles in ensuring food safety. Government regulators are responsible for enforcing legal and regulatory requirements, and for elaborating auditing performance of the system through monitoring and surveillance activities.

The application of a FOOD SAFETY SYSTEM requires an appropriate food control system within a national strategy. This national strategy is influenced by the responsibilities of various bodies of government, and the availability of human and financial resources.

International standards and international perceptions of risk should be taken into consideration. The necessary infrastructure for such exercise tends to be **country specific**.

III. Proposals for a National Food Safety System:

Objectives:

- Protection of the consumers by reducing the risk of food borne diseases
- Protection of the consumers from adulterated and unsanitary food.
- Maintaining consumer confidence in the food system which will contribute to economic development.

Activities:

A National Food Safety System should perform the following activities:

- Formulation of a national food safety policy
- Use the risk analysis as a science based foundation
- Development and updating food legislation, regulations and standards
- Coordination of food control activities and surveillance.
- Improving Food Safety Practices in Lebanese Food Industry
- Monitoring and audit
- Planning and implementation of food inspection
- Development of education, training and research

- The basic components of a regulatory food control system are:

Food laws and regulations:

For the moment, the new food law is still under discussion. The authorities are wasting time and possibilities to create a framework which is well adopted to the needs of Lebanon. Our food control system consists of some official documents and laws giving legal definitions for unsafe food and describing the role of the five ministries involved in the so-called food safety system. Regulations ensure that only safe food is placed on the market, require prospective tools for enforcement, for example removing or confiscating unsafe food from the market, and punish the offender. We are seeking for food legislation reflecting a blend of scientific, social, political and economic forces.

Food Law must cover a wider range of provisions than those that relate to just food. It includes all measures related to materials and substances in contact with food. The regulation establishes the rights of consumers to safe food and to accurate and honest information. These regulations must establish the principles of risk analysis in an independent objective and transparent manner.

<u>Traceability</u>:

Traceability facilitates the withdrawal of foods and enables consumers to be provided with targeted and accurate information concerning faulty products. The regulation provides for traceability of all food and feeds being made available to the competent authorities if requested.

<u>Management of food control system</u>:

Food control system requires operational coordination at national level. This coordination function must be performed by a central management entity depending on an adequate administrative structure with clearly defined accountability to carry out the activities of this food control system.

To ensure that management decisions are rational, and arrive in a transparent manner, active communication is to be emphasized. Prior to embarking on a risk assessment, risk assessors and risk managers should meet to identify food safety problems and issues, clarify risk management questions and goals, and agree on the scope of risk assessment.

<u>Inspection services</u>:

These services provide the eyes and the ears of the system. It carries out inspections of food premises; collects food samples for analysis, and undertakes other activities that are necessary to determine compliance with regulations. A food inspector is a key functionary who has contact with the food industry, food traders, and the public. This means that these inspectors must be qualified and trained people for food inspection service. The whole integrity of the system depends on the reputation and integrity of the inspection service and to a large extent on the inspector himself.

This is why food safety educational and training programs are urgent and necessary at all levels of the food chain, as well as programs and activities which aim at enhancing consumer awareness.

Laboratory services:

According to the report of Mr. Schebesta, there is still no accredited or certified laboratory for food in Lebanon, even though, laboratories play a vital role in the enforcement of regulatory food control measures and are considered to be an essential and highly technical component of the system.

They are engaged in microbiological and chemical analysis of food samples delivered by inspectors to determine if a food is unsafe and injurious to health. The utmost care is necessary to ensure the efficient and effective performance of the laboratory.

Our recommendation in this matter is to establish public and private certified labs for food, independent and credible, to assess if there is non-compliance with food standards.

Precautionary principle:

Food legislation has evolved over the last forty years with the establishment and maintenance of a high level of protection of human health. This is why new regulations establish the « PRECAUTIONARY PRINCIPLE » as an option to risk management, when a decision is to be made.

IV. Organizational Structure:

Safety rules for food products are not in force in our country. On the other hand, the legal framework is out of date, creates overlapping because of unclear definitions, and enables different interpretations in various ministries and even their internal departments, and provides no clear definition of: Who, what, why, or when Somebody has to act. This situation is creating overlapping which causes conflicts and loss of efficiency. A new general framework for a food safety system is urgently needed, based on what we resumed above, i.e. a scientific basis with clear definitions, the farm to fork approach, the principles of risk analysis, traceability, transparency, the use of the precautionary

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principle, the provision of a high level of health protection and the obligation that only safe food is placed on the market.

Efforts have been made to reorganize the national food control system and to develop structures favorable to a higher level of coordination. This has resulted, at times, in the development of several problems due to the desire of unifying the administrative structure in a unified system.

During the last year, after reviewing and revising the local food safety system, the food safety panel considered a system based on a national integrated approach to be the optimal structure which meets present challenges related to food safety and its control; with the aim of achieving effective collaboration and coordination among existing administrative structures, while inducing minimal changes within these structures. The FSP calls for the establishment of an autonomous national food control agency as a separate and distinct unit with a structured food safety program, operating as the interface between government and the various stakeholders in the food chain, in order to get rid of the existing overlapping.

This unit must be a non-profit organization, on the trusteeship of the council of Ministers and other stakeholders, resourced by a board composed of well-trained staff providing a transparent means of controlling food across the whole food chain. It should be composed of:

- representatives from different ministries involved in food safety activities
- representatives from the food industry sector
- representatives from the standardizing organization
- representatives from non-governmental consumer protection
- representatives from the academic sector
- representatives from NGO's
- representatives from the restaurant syndicate

Governed by a management board with a chairperson and directors

The activities of such a board should be the following:

- formulation of food control policy and the provision of advice provided to all stakeholders throughout the food chain
- provision of a coordinating mechanism for uniform implementation of food control activities
- proposed measures in order to enhance the framework of rules and regulations and keep track in meeting international requirements
- adoption of a strategic view across the whole food chain and consultation with all sectors of the food chain and all interest groups to ensure public involvement in the policy-making process
- close contact with the academic world
- coordination, monitoring and auditing of food safety control activities, including food analysis, inspection, enforcement and education
- enhancement of consumer awareness
- use of existing and newly-created laboratories, both public and private, to conduct necessary analyses
- reporting of results of food control to the different governmental bodies concerned
- development of traceability techniques to trace the products from the farm to the consumer
- application of control system and techniques for street food business
- monitoring the results of food control activities in order to create yearly control schedules
- creation of an alert system to identify and respond to food safety emergencies rapidly and effectively
- Allowance for the functional separation between risk assessment and risk management functions resulting in objective consumer protection measures, while facilitating the development of an effective risk analysis approach.

We will add the recommandations:10 to 16 presented in the report of Mr. K. Schebesta (May-June 2001 first mission of the International consultant in food safety, UNIDO).

These activities could continue to lie with existing local bodies each one functioning within the overall strategic and policy framework. The management of this agency must be assisted through appropriate scientific and coordinating committees.

The agency should be involved in supporting research and development in areas of risk assessment and risk management.

The National Food Safety Agency and its contact

with the different stakeholders and Ministries
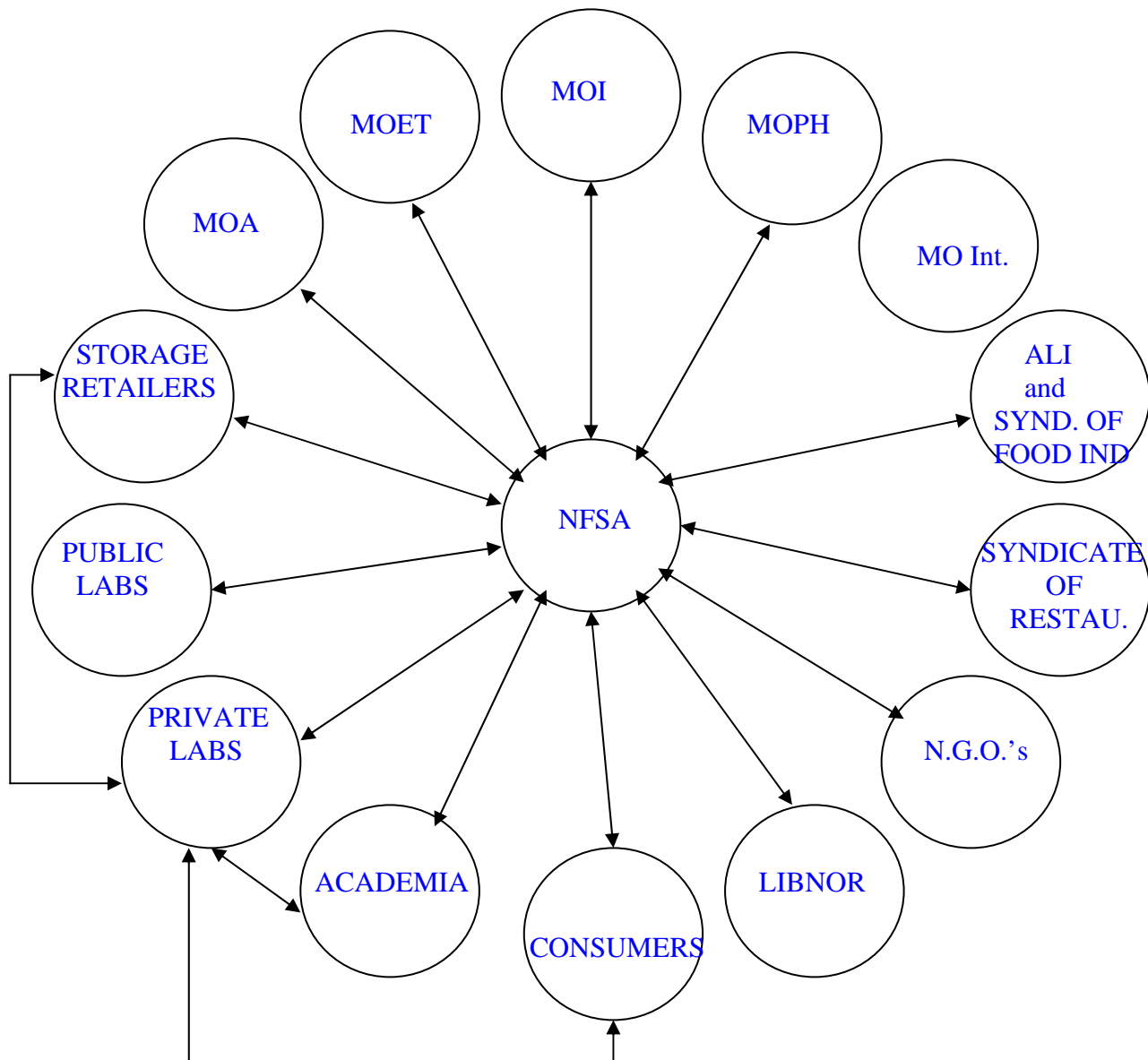
Food Risks and Hazards in Lebanon

International legislatives and directives require that all food companies, shops and catering establishments must have in place an effective HACCP system to ensure the safety of food consumed. In countries such as Lebanon such system is still a major cause of concern for both businesses (especially small and medium enterprises) and health authorities. The former lacks the basic education to carry out the system by themselves. The latter are willing to assist the many food businesses that wish to comply with the law.

However, microbiological hazard analysis requires knowledge of which micro-organisms are potentially of significance in the food being produced, bearing in mind the nature of the process and the subsequent history of the food. If not, the manufacturer will either waste time and money evaluating for organisms which pose an insignificant risk, or will miss potential risks. To perform effective mechanisms in food control is actually exercised using voluntary processing and handling controls that are applied by the undertakings plus surveillance, educational, or regulatory activities which usually are the responsibility of other organizations than the food company itself.

Based on the findings of the present situation in Lebanon, which have been explained previously, it was necessary to perform a strategic planning to elaborate an effective control system ensuring the safety of food from production to consumption. Furthermore, endorse systematic approaches of norms, legislation and directives. This strategy will be based on the following two headlines:

1. *Internal food industry controls*
2. *External controls*

- Internal food industry controls:

These include all those controls which are the responsibility of the management of food industry. The main objective of a food business is to produce food at a profit being on the safe side at all times. This implies the implementation and maintenance of cost-effective hygiene programs based on hazard analysis and controls at points critical to food safety. Voluntary controls to minimize the risk of exposure to a hazard must be organized and coordinated from the management into all structures of the premises such as:

- *Personnel: Continuous education and training programs, motivation and supervision.*
- *Food: Application of microbiological criteria in decisions regarding purchases of raw materials, Storage and stock rotation, Suitable packaging and warning labeling of risks involved in the product in case of abuse, Adequate distribution and service, Maintaining record keeping of all documents of HACCP plan, and Strict following of the adequate codes of practice and good manufacturing practices.*
- *Premises and equipments: Planning, design, and construction of the plant in accordance with the operation that will be taking place.*

- External controls:

These include all those controls usually exercised by other institutions than the food industry. These controls act as a safeguard of public health at national level. External controls can be divided into:

a. *Surveillance of food borne diseases*

This is a continuous and systematic process that consists of (a) receiving notification of illness, (b) Investigating incidents and reporting findings, (c) collecting and interpreting data, and (d) Disseminating information to effect control of current problems and to provide guidance for preventing the diseases in the future.

b. *Educational activities*

These include training and education in matters concerning hazards and risks together with the prevention and control of disease, focused on:

- *Professional public health, regulatory, and food industry QC personnel.*
- *Food industry managers, supervisors and workers.*
- *Consumers*

c. Regulatory activities

These include product inspection, process inspection, product recall, and legal action.

Implementation of Food Safety Policy

a. Classification of food products

Food products were classified into nineteen groups according to method of processing, way of consumption and in relation to biological hazards. Groups may include individual items or sub-groups that have various features in common (Table 1). This classification will help in tracing product origin, lines of production, associated risks, hygienic practices and good manufacturing practices. Categories of food cover all available food items with comprehensive margin to include probable new developed products. These products will be thoroughly studied to ensure their safety to consumers, either they are originally imported or locally produced. Routings, methodology and systematic processes are to be addressed later in this report.

It is quite evident that these groups of food, substantially, vary among themselves in their hazard and risk association. Furthermore, the susceptibility of items to risk within the group also varies. For example, group 17 contains a wide range of products that might be reasonably safe, while some others are cautiously safe. No one group would contain similar trend food products in their association with health-hazards. Thus, it is necessary to count for all those elements and factors that may be considered risk enablers. Based on those enablers' conditions, priorities of hazard analysis and risk assessments will be studied.

As a result, and together with national conditions and concerns, priority of analysis will be determined. Presently, FSP has been urged by various institutions and organizations (public and private) to give Tahina and Tahina products first priority. This is due to the appearance of various outbreaks in and outside Lebanon. An alarming economical and health conditions such as this case would, under any circumstances, reorganize priorities and cause unpredicted deviations in FSP strategy. Yet, Tahina e.g. is not mentioned by name in the nineteen groups of food. Thus, according to processing conditions, risk association factors, consumption conditions and preservations potential, this product will be classified in group eighteen (Non – dairy fats and oils).

On the other hand, FSP is expecting to face major problems and constraints when studying, analyzing and interpreting categories, characterizations and specifications of locally produced traditional foods. Such varieties of food products necessitates the execution of several research projects of different orientation nature, depending upon needs and requirements concerning nutrition, additives, health risks and hazards, norms, standards, legislative, et.. These types of research projects require substantial, continuous and sustainable finance resources. In addition, training, extension, public awareness and all related subjects and materials are basic pillars for success and objectives achievement.

Classification of food products into groups with reference to biological hazards

No	Food group	Examples	Use	Storage
1	Raw poultry	Whole birds, portions, minced, reformed, marinades products	To be cooked	Frozen or chilled
2	Raw meat	Joints, minced, offal's, burgers, sausages, bacon, marinades, cured	To be cooked	Frozen or chilled
3	Raw fish and shellfish	Fillets, smoked, mussels oysters, prawns, marinades	To be cooked or ready to eat	Frozen or chilled
4	Dough, pasta and batters	Bread dough, noodles, pastry, part-baked products, spaghetti, and tagliatelli.	To be cooked	Frozen or chilled
5	Fruit and fruit juices	Whole, fresh juices, pasteurized juices, fruit cocktail, sliced or chopped	To be cooked or ready to eat	Frozen, chilled or ambient
6	Raw and prepared vegetables	Prepared salads, whole parts, blanched vegetables, fresh herbs, bean sprouts, fillings	To be cooked or ready to eat	Frozen chilled or ambient
7	Milk, cream and dairy products	Liquid milk, cream, cheese, ice-cream, butter, dairy desserts	Ready to eat	Frozen or chilled
8	UHT milk, cream and dairy products	Long life milk, flavored milk, UHT cream, sterilized milk	Ready to eat	Ambient
9	Part cooked foods	Pizza, prepared meals, coated fish and meat products, fresh filled pastas.	To be cooked	Frozen or chilled
10	Processed foods	Ready meals, cooked meats and fish products, pies, pasties, sandwiches, sous vide products, fermented meats, cured meats, desserts, moist bakery products (muffins, crumpet)	Ready to eat or to be reheated	Frozen or chilled
11	Dried foods, to be cooked	Rice's, pulses, cereals, grains, flour, vegetables, fruit, pasta, coconuts, dry mixes, meats, herbs, spices.	To be cooked	Ambient
12	Dried raw foods, ready to eat	Nuts, herbs, spices, coconut.	Ready to eat	Ambient
13	Dried heat processed foods	Breakfast cereals, crisps, snacks confectionery, filled or toped biscuits and cakes, herbs, spices.	Ready to eat	Ambient
14	Dried heat processed foods, ready to eat after rehydration	Soup mixes, dessert mixes, milk powder, pot snacks.	Ready to eat after rehydration	Ambient
15	Dried baby foods	Dry mixes, milk powder	Ready to eat after rehydration	Ambient
16	Canned, pouched or bottled foods (F0>3process)	Canned meats, fish, vegetables, and soups, ready meals in pouches, baby foods in jars.	Any	Ambient
17	Preserved foods – heat treated (F0<3 process), intermediate moisture or low pH	Salami, dry cured hams, pastrami, vegetables and herbs in oil, canned or bottled fruits, jams, pickles, and sauces.	Ready to eat	Ambient
18	Non – dairy fats and oils	Cooking oils, cocoa butter, fat spreads, virgin olive oil, nuts oil, nut butters.	Any	Ambient or chilled
19	Soft drinks and alcoholic beverages	Fruit squashes, cola, lemonade, beers, wine, fruit drinks.	Ready to drink	Ambient

b. Food safety policy

Food safety policy will be based on an internationally endorsed systematic approach, i.e. will be built upon three main pillars, namely, risk assessment, risk management and risk communication. Each pillar is then detailed into applicable fragments studied by experts in the specific field which is related to the food group classification of Table 1.The outcome of these studies should meet the policy objectives which are briefly stated in Fig. 1. Risk assessment will be the starting point of this project. This includes the identification of hazard, hazard characterization and limit of exposure of such hazard at a certain point in the production line.

The implementation of phase (1); risk assessment will be carried out in response with the results generated from data collected from concerned governmental institutions. These results have been discussed and concluded previously in this report.

Fig.1: General layout of food safety policy

Risk Assessment

Data base
Calling for official documents
(Filling the Gaps)

Hazard
identification

Hazard
characterization

Exposure
assessment

Risk
characterization

Identify type of hazard

•Biological (B)
•Chemical ©
•Physical (P)

Determine limits
Of hazards (critical
And / or non critical

Risks of exposure
Limits and
Frequencies
Preventive
Measures
availability

Likelihood of
Occurrence
Severity of
Consequences

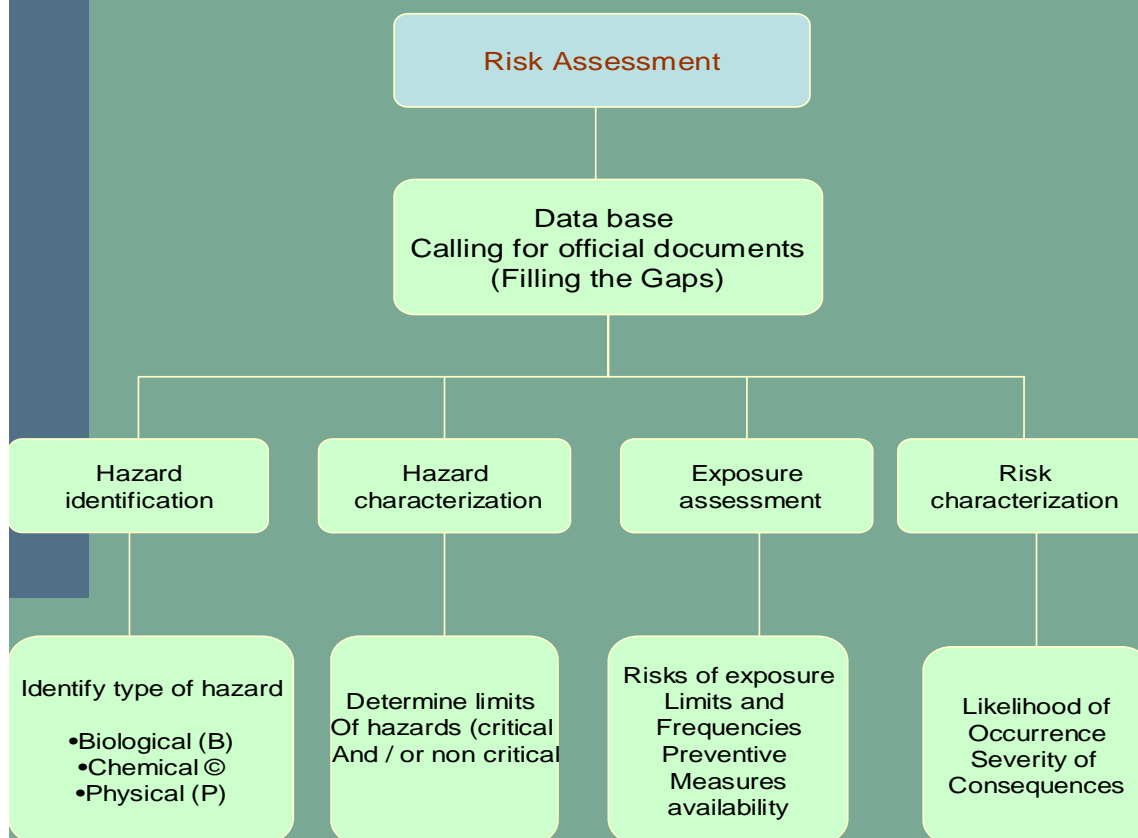*UNIDO – Integrated Program – Food Safety Lebanon*

Fig. 2: Schematic flow chart of working phase .I. risk assessment.

In order to discuss the broad headlines of the schematic flow chart drawn in Fig. 2, it was necessary to elaborate routings of food items coming into consumption. This is to facilitate understanding of conditions (output and input) that are related to safety of a

food item or a group of food. Also, evolving new laws and legislation to protect optimum conditions will be much easier. Routings are illustrated schematically in Fig. 3.

Fig. 3: Schematic flow chart of possible routings of food products in the production line.

Figure 3 shows a broad strategy for the implementation of risk assessment. Foods are divided into their origins, plant and animal. These products will be traced back according to various influencing factors summarized by agricultural inputs and environmental elements including natural resources. Tracing will be carried out by specialists in the specific fields e.g. pesticides, insecticides, fertilizers..etc. Imported products will be subject to similar pathways. The small 19 circles in the figure represent food groups, whereas the central circle is the site of production. Screening methodology will be established for all inputs and outputs of the manufacturing site by experts in the various fields.

Figure 3 will be fragmented into detailed flow charts to determine routings of related inputs and outputs from start to the end point. The system should allow tracing a particular item backward and forward at any stage of production. Also, it should be flexible enough to include small and medium size enterprises.

In order to harmonize methodology and to systemize planning work, a HACCP based technique was established. This is illustrated in Figure 4. Every expert should work according to this flow chart and implement the same approach.

FOOD SAFETY LEBANON- Sequence of Approach

1	Describe product, point, process, etc.
2	Identify intended use
3	Construct flow diagram
4	On-site confirmation of diagram
5	List all potential hazards Conduct hazard analysis & consider control measures
6	Determine critical control points
7	Establish critical limits for each critical point
8	Establish monitoring system for each CCP
9	Establish corrective actions
10	Establish verification procedures
11	Establish documentation and record keeping

UNIDO – Integrated program – Food Safety Lebanon

Figure 4: A HACCP based sequence of approach to handle a particular product and routings

Each step in this sequence will be described in group with the determination of reference points, procedures and limitations. Thus every body will be familiar with the glossary of terms related to the undergoing work. The backbones of these steps are:

- List all potential hazards, conduct hazard analysis and consider control measures
- Determine critical control points

Both points will be assessed according to HACCP based approaches in relation to scientific data (national and international) cost of quality, and national economic policies. The determination of critical control points will be carried out according to the flow chart illustrated in Figure 5.
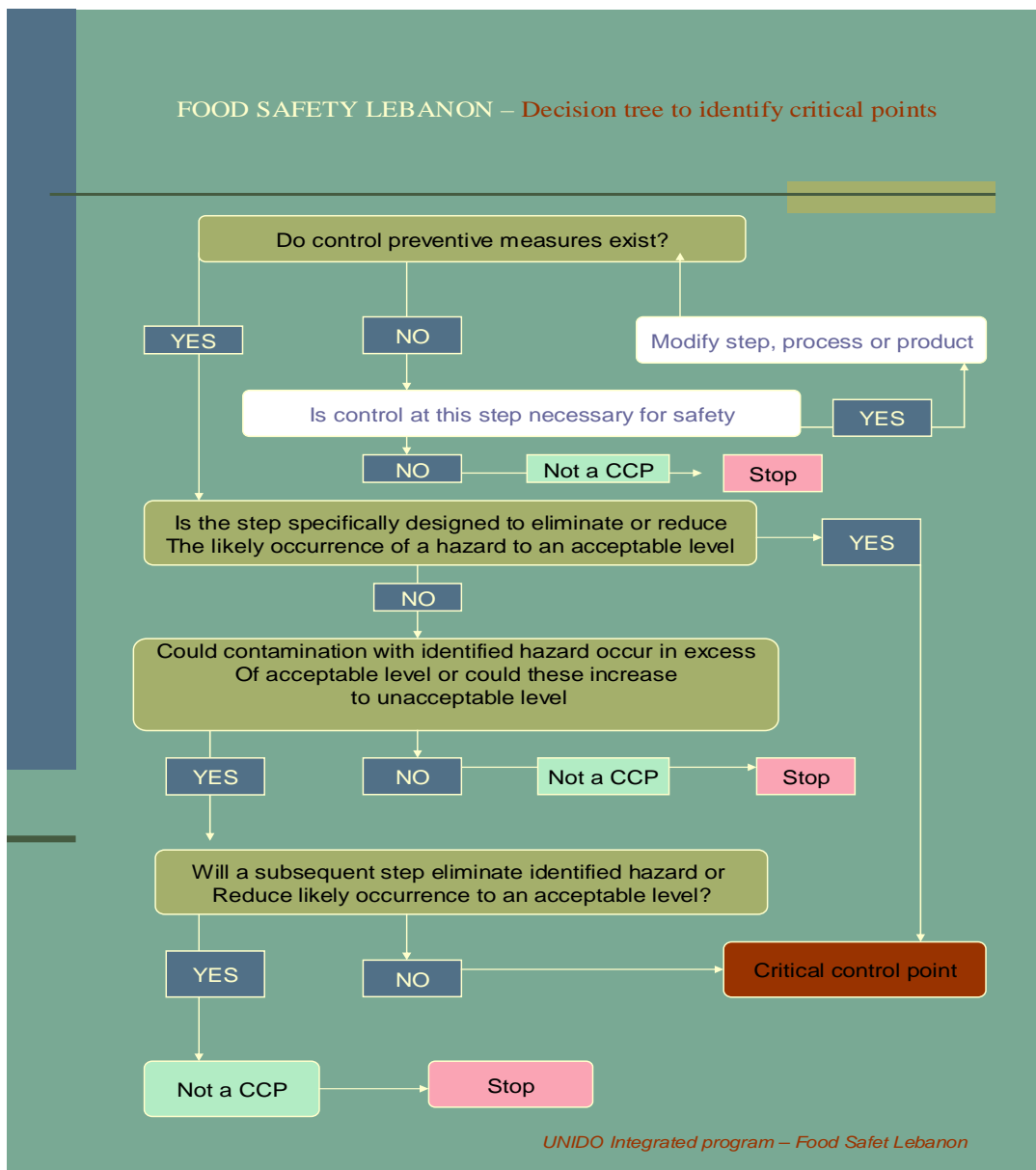
Figure 5: Decision tree to identify critical points

This decision tree will be applied to each individual turning point in the production chain, in addition to routings, inputs and outputs. Risk assessment and analysis will be estimated accordingly taking into consideration international standards of measurements and optimization. The outcome of the total planning is to elaborate and enhance food regulations and systems of application according to the flow chart illustrated in Figure 6.
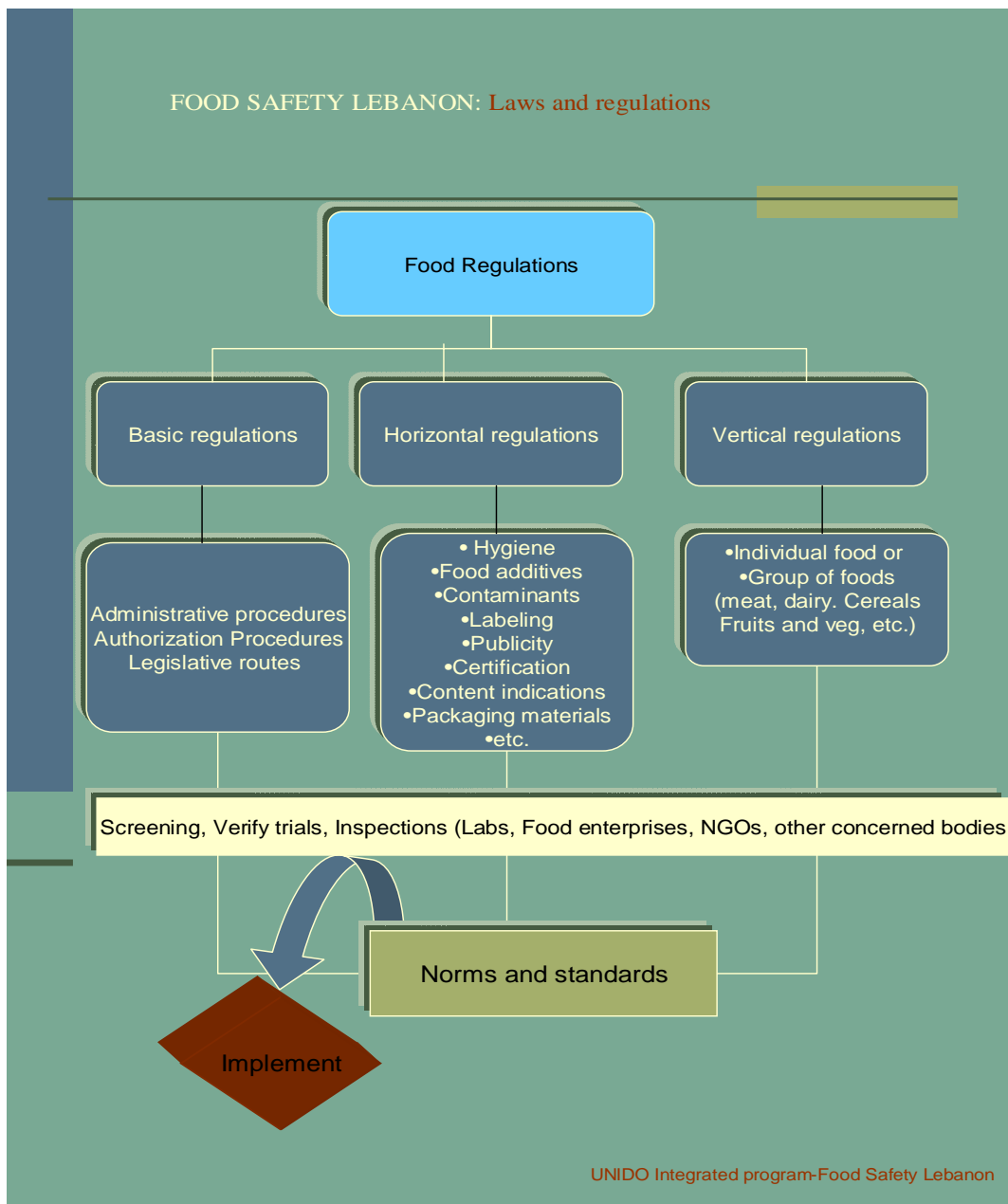
Fig. 6: Expected outcome of food laws and regulations.

At this stage, food laws and regulations should be elaborated in accordance with the special conditions of each food product and/or group. Basic regulations are of vital significance to ensure a reliable management and communication system. Thus, it is envisaged that all concerned parties in the country should be involved in implementing this policy and be familiar with all possible routings that could arise as a result.

The implementation of this project requires maximum joint and coordinated efforts of all concerned bodies at all levels, particularly execution institutions i.e. ministries of concern. The cost in term of work, time and money is certainly huge, but the outcome is much more beneficial. The private sector, however, is invited to be more effective in supporting food safety projects by all possible means. Also, official decision makers are encouraged to initiate and presume a control system that can be effective to ensure the safety of food for either local consumption or export. International support is also required and necessary to achieve the objectives of this project. Support may include various technologies e.g. instrumental, financial, technology transfer, training and various other supportive logistics.

Training the Trainers Program

The prime objective of this part of the report is to improve the effectiveness and sustainability of safe food production in Lebanon. This goal is specifically directed to upgrading the skills of managers, senior staff and other employees in methods and techniques of food safety program to improve planning, organization, implementation and evaluation of trainees' particular development programs.

I. Approach

FSP approach is to train:

a. A core group (Core Trainers) in food safety management, supervision, extension or any rational program. The core trainers will be trained in areas related to food safety mainly GMP, GHP, GLP, HACCP and related issues. Core trainers will be oriented toward management, operational planning, monitoring and evaluation, organizing structures of implementation, team building and participatory management methods, performance improvement planning as well as in the techniques of training needs assessments and curricula development.

b. A group of specialist (Associate Trainers) in general skills of training. The associate trainers are the subject matter specialists who will act as trainers for upgrading technical skills of the staff in areas such as production, marketing platforms, environmental sites of production, transportation and distribution channels of food.

c. The core trainers will be responsible through their respective training units for conducting management training programs at the national level. Central training units should be established in each of the food safety inter-related organizations or institutions (private and public sectors). This is to organize and manage training activities throughout the program.

II. Training of Trainers

Training Needs - Curriculum Preparation:

This phase consists of a series of integrated activities:

- Introductory workshop presenting the program, its methods and activities and preparing the training needs assessment survey.
- Training needs assessment surveys in concerned areas.
- A second workshop to draw conclusions from the assessment survey and to design training curricula.
- Preparation of training materials and a third workshop to finalize training materials.

(a) **Workshop – 1**: The main objective of this workshop is to familiarize trainers with FSP approach, methodology and techniques. This activity may include:

- ✓ Introduction to FSP program and concerned activities.
- ✓ Assessment of the present standing of the trainees.
- ✓ Learning cycles, training approach, adult education.
- ✓ Principle of communication, motivation and perception.
- ✓ Training and facilitation techniques.
- ✓ Participatory approach and team working.
- ✓ Preparing for need assessment surveys.

(b) **Assessment of Training Needs:** Teams of trainers in their respective institutions would conduct assessments with assistance of training consultants in order to ensure conformity of the assessment with the criteria specified in workshop -1. In practice, teams would identify problems, assess training needs, identify relevant subjects for case studies and select candidates to attend pilot training courses.

(c) Workshop - 2: The primary objective of this activity is to draw conclusions from the previous phase (ATN), design curricula and prepare case studies. These can be approached through:

- Classification of staff positions
- Design curriculum and develop training models
- Principals of logical framework planning and impact monitoring
- Draw up case studies and learn to use them
- Acquire familiarity with performance improvement plan

(d) Workshop -3: Finalizing training materials. Trainers would also be taught to master techniques for developing team spirit and for applying performance improvement plans. Specific objectives may include:

- Finalize plans, materials, case studies...
- Master performance improvement plans as a tool for diagnosis, planning and day-to-day management of projects and programs.
- Mediation and negotiation techniques.
- Clarify roles and responsibilities.
- Review pilot and full scale training schedules.
- Develop appropriate tools for monitoring practical use of methods.

Upon the completion of this workshop, FSP would arrange the translation and reproduction of training materials and would forward this material to institutions in concern.

III. Pilot Training Phase

This phase will be addressed to those responsible for managing food safety projects and programs. It consists of a series of activities in the form of workshops and practical training, and may include the following:

- *Workshop for project and program managers*: This is addressed to selected directors responsible for managing food safety projects or issues within the specific margins and duties of such institutions.

- *Workshop for senior staff:* This seminar is intended for senior staff responsible for project components, depending on the institution.

- *Team-Building workshop:* The main objective is to develop team work within the food safety projects and programs, and then applying performance improvement plans to their projects and programs.

- *Field follow up of application*: This is to evaluate the first performance improvement plans, particularly, trainers would evaluate use of newly acquired skills.

- *Workshop on action plans completion*: In this workshop, the performance improvement plans developed for project or program would be reviewed.

- *Closing workshop*: This is a transmission from the pilot scale to the full-scale training phase.

IV. Full-scale Training

The objective of full – scale training is to multiply the program impact by increasing the number of trained managers, specialists and other associated staff; thus, achieving a significant improvement in the food safety program and project performance. The success

of full-scale training depends on the efforts put into preceding activities designed to ensure program sustainability.

V. Program Sustainability

To ensure program sustainability central training units (CTU) should adopt several approaches:

(a) Setting central training units (CTU) and establishing institutional agreements including fund participation in order to cover training costs through sustainable financial mechanisms.

(b) Stimulating demand for training through information campaigns addressed to donors, governments and autonomous public and non-public institutions.

(c) Certificating of participants through well established national and possibly international training institutions.

(d) Ensuring that the training achieved in food safety projects and programs is disseminated to increase impact.

Depending upon the resulting impact, additional training might be considered at any stage of practice; also, creating a food safety newsletter which may be published by one of the more dynamic institutions.

Public Awareness Program

The necessity to safely meet the food needs of the burgeoning global population is an important demand. Furthermore, the occurrence of food borne diseases necessitates preventive measures. Food safety is no longer a national or regional concern; it is an international objective to be achieved.

Communicating to the consumer about food safety is our responsibility. Consumer's concerns, practices and sources of information should be assessed in developing professional effective consumer food safety awareness programs that are simple, comprehensive and action oriented. The consumer should be provided with comprehensive information that will emphasize the importance of maintaining food quality. Food quality that will provide a food product that is wholesome and safe for consumption. Consumer awareness programs should address the following issues and concerns:

- Nutritive food composition and health
- Food Mislabeling (false nutrition information or other misleading statements)
- Economic Deceptions (violation of standards, counterfeit foods….)
- Organic foods
- Genetically Modified Foods
- Spoilage and food loss
- Food Hygiene
- The Burden of Food borne Diseases (Bacterial, Viral, Parasitic, Chemical Contaminants and additives)
- Importance and limitations of food processing and preservation techniques (high-temperature treatment, low-temperature treatment, chemical preservation, drying and radiation treatment..)
- Importance of food management (storage, transportation and serving)

In developing consumer's awareness food safety programs, target groups should be properly identified, and in accordance catered for. Such target groups may relate to: a) the general public, b) housewives, c) youth clubs (schools and universities) d) non – governmental organizations and e) community based organizations. In formulating such programs the following major aspects should be taken into consideration :

- Consumer's perceptions

It is the perceived susceptibility to food poisoning, perceived seriousness of food poisoning, knowledge of how food poisoning is caused, and the existing beliefs.

- Consumer's modifying factors

    The demographic variables of age, sex, ethnicity, race, socio-psychological, variables and reference group pressure.

This is essential to determine the likelihood of action (perceived benefits of food hygiene minus perceived barriers) and as such the likelihood of changing habits to improve food quality. Besides, it will direct the program towards cues to action such as:

- Workshops for target groups (NGO's ,CBO's, Mass Media, Youth in schools, organizations, and universities)
- Mass Media Campaigns (Newspapers/ magazines, reminder leaflets, TV spots, short documentaries, electronic mail..)
- National wide scale activities "food safety day"
- Tailored food safety activities (health centers, clinics, nutrition centers)

It is very significant to emphasize the importance of sustainability of consumer's food safety awareness programs. Such programs should be comprehensive, simple and action-oriented. A flow chart for formulating consumer's food safety awareness programs is presented in figures 1 & 2.