awareness seminar
Introducing Codex Alimentarius

organised by:

ERA CONSUMER MALAYSIA

ERA CONSUMER MALAYSIA
[Education and Research Association for Consumers, Malaysia]

in collaboration with:

MINISTRY OF HEALTH
MALAYSIA

with the support of:

CONSUMERS INTERNATIONAL
[Regional Office for Asia and The Pacific]

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ERA CONSUMER MALAYSIA

(Education and Research Association for Consumers, Malaysia]

ERA CONSUMER is a voluntary, non-political and non-profit organization. ERA focuses on issues ranging from food security, human rights, environment, consumer rights to women's rights for a socially just and equitable society.

Background

ERA Consumer organised a National Training Workshop on Codex in collaboration with the Food Quality Control Division, Ministry of Health. The training was held on 10 & 11 October 2001 at Pearl International Hotel, Kuala Lumpur.

ERA Consumer Malaysia, is a non-profit, non-governmental organization based in Petaling Jaya, Malaysia, that has been campaigning for consumer empowerment for the past fifteen years. ERA Consumer Malaysia have been actively advocating issues on consumer protection, food security and safety, and human rights.

Our mission is act as a research, education and advocacy group, building linkages and working in partnership with community based organizations and grassroots communities to build and strengthen their capacity and empower them through initiatives in socio-economic issues, accountable governance, sustainable agriculture and ecological endeavours.

Our programs are designed and implemented to nurture alternative people centred development initiatives at the community level through participatory accountable governance, socio-economic, sustainable agriculture and ecological endeavours to facilitate access and management of resources for people to develop their full potentials and expand their choices in accordance with their needs and interests.

ERA's Areas of Focus:

➢ Consumer Research, Education and Protection:

ERA CONSUMER MALAYSIA undertakes independent action-oriented research on contemporary consumer problems and on various government policies affecting consumers. The organization also initiates consumer advice programs for individual and collective actions. Standards development and monitoring of consumer products and services is another area in which ERA CONSUMER is actively involved. ERA CONSUMER MALAYSIA provides up to date information on current trends in standard making and implementation. ERA CONSUMER MALAYSIA conducts training programs periodically for various target groups on standards and Codex Alimentarius (food standards).

➢ Accountable Governance and Human Rights:

The promotion of human rights is indivisible to the pursuit of a holistic and just development. In a developing country like Malaysia, recognition and respect of rights to political, social, cultural and economic self-determination of all peoples are fundamental to the protection of our dignity, equality, justice, peace and freedom. In order for a civil society to exist, to assert and defend their fundamental rights which have been impinged by recent developments, people can only be empowered through human rights education. ERA CONSUMER MALAYSIA has been mandated to be the National Coordinator for the Human Rights Education Programme in Malaysia through a national NGO consultation held in 1999. Thus, the Human Rights (HR) Division in ERA CONSUMER MALAYSIA conducts various activities and programs in order to promote awareness on basic human rights issues in Malaysia.

➢ Sustainable Agriculture and Sustainable Food Production:

The Sustainable Development (SD) Division aims to promote agriculture that is sustainable, that ensures household food security and develops the rural sector to become economically and a viable self-reliant community. Self-reliance in this context does not mean subsistence farming but more to ensure adequate production and sustainable consumption for a sustainable livelihood with the capacity to negotiate with other communities on more equitable terms. ERA Consumer also conducts consumer education programs on sustainable consumption.

Objective

The objective of the National Training Workshop on Codex is to expose the participants on the mechanism of Codex Alimentarius Committee(CAC), its formation and the purpose of its set up. The training program is to evaluate the CAC from a number of perspective i.e. from the government, NGO perspective and media/ journalists.

This training workshop helped us in beefing up our pool of volunteers and expose them to CODEX work. It was used as a platform in building a team that will able to handle CODEX matter effectively in future.

The workshop covered the following areas:

- Introduction to Codex, its set up and its importance in relation to WTO.
- The significance of Codex to international trade. Consumer participation (NGO) in Codex work and
- Its importance to consumer at large.
- Effective participation of consumers via the media in influencing the government in CODEX matters.
- Forging closer working relationship with government officials on Codex meetings

The training achievement

- This workshop gave the participant a better view on how the Codex mechanism works and its importance.
- It also gave insights on how to effectively lobby with our government and an effective co-ordination among civil society fraternity in Malaysia.

Overall it was an informative workshop for all participants on Codex and the mechanism of WTO.

This workshop gave an opportunities for other civil society movements in Malaysia acting on specialized area for example pesticides, sustainable agriculture and environment to work together in drawing the consumer stand on CODEX matters.

Participants

- Volunteers working on food safety issues
- Government officials from various ministries
- Members of relevant business sectors e.g. Federation of Malaysian Manufacturers (FMM)
- Other Civil Society Organisations and State Consumer Associations
- Journalists/Media

CODEX

Codex Alimentarius is a Latin word. It means "the food code". CAC was established in 1962 by FAO/WHO and currently has 165 member countries. It covers food quality and food safety aspects. It ensures the consumer a sound, wholesome product free from adulteration, correctly labelled and presented. Codex also presents an opportunity for all member countries to join the international community in formulating and harmonizing food standards and ensuring their global implementation.

The Training Workshop

The training workshop was conducted over a two day period. It started on the 10th evening by getting the participants familiarising with the importance of labelling in relation to consumer preference. This session also explored the importance of labelling from a religious perspective, nutritious perspective and consumers perspective on the right to know the content of the food that they consume.

On the second day the participants were introduced to Codex Alimentarius, its mechanism and its activities in Malaysia. CAC deals with hundreds of issues and standard, however in this training session five, specific Codex issues that plays a very important role in every consumers daily life was dealt with. The issues are :

- Hygiene
- Labelling
- Nutrition
- Biotechnology
- Pesticide

Pesticide residue in food was the other Codex issue dealt in this training workshop. The participants were briefed on the effect of pesticide on human through usage and consumption. It also covered the long term effect on the environment.

The other important player in the food chain i.e. the manufacturer's role in development and implementing the approved Codex standards was presented by the representative from Federation of Malaysian Manufacturers.

Attach are the papers presented during the two day training workshop.

Opening Speech

by
Datin Dr. Hajjah Harrison Aziz bt.Shahabuddin
Director
Food Quality Control Division
Ministry of Health
[Read by Dr. Yahya bin Hj. Baba]

Mr. Marimuthu Nadason, President, ERA Consumer,

Ladies and Gentlemen:
Assalamualaikum wbt and a very good morning to all present today.

First and foremost I would like to express my sincere gratitude to the organiser of this seminar for inviting me to officiate this seminar, which aims at creating awareness amongst consumers on Codex and its implications to Malaysia.

Opening speech - delivered by Dr. Yahya

This is the first time such event is organized by ERA Consumer in collaboration with the Food Quality Control Division, Ministry of Health. I hope such collaborative effort will continue to flourish and benefit all in the long run.

Ladies and Gentlemen:
The Food Quality Control Division believes that all stakeholders involved in the safety of food should be consulted, amongst others, in decision-making and standard setting for national or international issues. As you are aware, the involvement of consumers in all our decision makings are apparent in that you are invited to all meetings pertaining to food safety undertaken by the Ministry of Health, specially the Food Quality Control Division. This is in line with our policy of transparency and accountability in decision-making.

At this juncture, I would like to record my appreciation to those of you who have been involved in these meetings and contributing to issues that are of interest to you. I understand that more representations are needed in areas where you have not ventured into, for example other Codex Sub- Committee meetings and other meetings organized by the Food Quality Control Division to address food safety

issues that arose. I believe that this seminar will give exposure to those of you who have not has such knowledge on Codex, its work and activities and also the enormous task undertaken by the Food Quality Control Division as the Codex Contact Point for Malaysia and its activities.

Ladies and Gentlemen:
Codex Alimentarius is the Latin word meaning "the food code" which comprises a collection of internationally adopted food standards presented in a uniform manner. These standards are essential to ensure that food traded internationally is safe and also to facilitate such trade. Hence, the objectives of Codex are to protect the health of consumers and to ensure fair practices in food trade.

The Codex Alimentarius Commission is a subsidiary body of the Food and Agriculture Organisation of the United Nations (FAO) and the World Health Organisation (WHO) and manages the Joint FAO/WHO Food Standards Programme. It was formed in 1962 and at the moment there are 165 member countries. The headquarters of the Commission is in Rome, Italy.

Ladies and Gentlemen:
Why is Codex so important? The volume of world food trade is enormous and is valued at between US$300 and US$400 billion. There is a significant increase in both the quantity and variety of food moving in international trade where the less developed countries are exporting more food. Another reason being the internationalisation of food taste and habits where foods peculiar to a region or country can now be made available anywhere in the world. This could also create new dimensions in the control of such food in regions or countries that "imported" such novel culinary tastes and habits.

The Codex Alimentarius has relevance to the international food trade. If you may recollect, Malaysia is signatory to the World Trade Organisation (WTO) which was the product of the Uruguay Round of multinational trade negotiations. Under the WTO, the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) cites Codex standards, guidelines and recommendations as the preferred international measures for facilitating international trade in food. As such, Codex standards have become the benchmarks against which national food measures and regulations are evaluated within the legal parameters of the Uruguay Round Agreements. With this implication, the importance of Codex standards, guidelines and recommendations must be taken into account.

Ladies and Gentlemen:
The Codex Alimentarius system presents a unique opportunity for all countries to join the international community in the formulation of food standards, codes of

hygienic practices and recommendations relating to compliance of such standards and ensuring its global implementation.

In this regard, the significance of the food code for consumer health protection was underscored in 1985 by the United Nations Regulations 39/248, whereby guidelines were adopted for use in the elaboration and reinforcement of consumer protection policies. In 1986, the Guidelines for Consumer Protection was published where food was identified as one of the three priority areas that are of essential concern to consumers and the Codex Alimentarius has been referred as the benchmark for consumer protection with regard to food.

Ladies and Gentlemen:
I have stressed earlier that decision-making on issues pertaining to food safety must be formulated with the interest of consumers at hand. As such, the participation of consumers and other stakeholders, in this respect, is of priority to my Division. I am glad to inform that our line of action is in tandem with the 1991 FAO/WHO Conference on Food Standards, Chemicals in Food and Food Trader, which recommended continuing and strengthened consumer participation in food-related decision making at national and international levels. Furthermore, in 1993, FAO held an expert consultation on the Integration of Consumer interests in Food Control.

I would like to elaborate on the 1993 FAO Expert Consultation where a few issues have been identified as being of concern to consumers. This includes: standards, nutritional quality, food control processes, information, environmental contamination, as well as irradiation and biotechnology. In summary, all these concerns point to either lack of information or lack of consumer confidence on the regulatory machinery in handling these issues.

Ladies and Gentlemen:
I agree that lack of information can lead to wrong decisions, either by the consumers, the policy makers or the food industries alike. Lack of information can mean inaccessibility or unavailability. It can also mean indifference when it touches on sensitive issues, for example, genetic modification or modern biotechnology, irradiation and any technologies that are new or unknown and require further examination of its safety and impact on human health. All of us are ultimately consumers. The fear of the unknown is always paramount to us because it could affect our family, community and country.

In this regard, I would like to emphasise that consumer association should play an important role in ensuring that information disseminated to consumers are correct, unblessed and precise. I suppose the objective of this seminar is also to ensure

consumers are informed on the activities of Codex and thus understand the significance of decisions made so as to ensure the safety of consumers while facilitating the trade in food.

Ladies and Gentlemen:
Another concern that was pointed out after the FAO Expert Consultation was the lack of consumer confidence on the enforcement of laws and regulations. This is human nature. We believe when we see action being taken but it is very difficult to believe when we are not there to witness the action. I assure you that enforcement of laws and regulations are being implemented to the best of our ability, taking into consideration the limited resources and infrastructure that are available. In this regard, I would like to urge all of you to play your role as consumers.

Food safety should be a prime agenda for all, be it the government, the industries or the consumers. All these parties should play important roles and have shared responsibility and accountability when dealing with issues on food safety. I stressed here that consumers are the prime movers of industries. You have the right of choice and your choice can shape the food industries.

Ladies and Gentlemen:
I would like to recall my earlier emphasis on the importance of collective efforts in decision-making. I agree that one way of arriving at such decision is through consultation and discussions and we are actually going into that at this moment in time. I hope you will be enlightened on the work of Codex and the activities undertaken by the Codex contact Point of Malaysia at the end of this seminar. I also hope that this seminar will enhance your knowledge on Codex and as such will increase your participation in codex activities specifically and other issues on food safety, generally.

Lastly, I hope this seminar is the beginning of other collaborations between ERA Consumer and the Food Quality Control Division, Ministry of Health. I wish you success in the seminar.

I hereby declare the National Training Workshop on codex officially open. Thank you.

Registration of participants - 11 October 2001

Responsibility to Proper Labeling

by Sohaimi Abd. Jalil
Chief Directorate, ISI Management Berhad
Programme Manager for Research Institute of Standards in Islam (RISIS)

The Islamic views concerning business code of ethics presented from the Quran and Sunnah covers six categories:

The first in those categories is Truthfulness

It is the basic ethical value of Islam. It demands us to be straight forward and truthful in our dealings and utterances and has profound implications for the conduct of business.

Abu Dharr reported that the Prophet said: "**There are three to whom Allah will not speak on the Day of Resurrection, nor look at nor praise**: the one who wears a lower garment below the ankles; the one who reminds others of gifts of favours; **and the one who sells his product by means of lies and false oaths**." (Reported by Muslim)

As an example, nutrition labeling is aimed at providing a means for conveying information of the nutrient content on the label of a food product, thereby assisting the consumer in the wise choice of food. It is a means of informing the consumer of the nutritional quality of a food product. Nutrition labeling also provides support to nutrition education activities as it encourages the use of sound nutrition principles in the selection of foods and preparation of meals.

Under the current food laws, known as the Malaysian Food Regulations 1985, it is not compulsory for food labels to have nutrition labeling. The current Regulations only make it compulsory for some foods to have nutrition labeling. These foods are the "special purpose foods" and include the infant formula and cereal-based foods for infants and young children. In addition, foods that have been enriched or fortified with specific vitamins or minerals must have a declaration of the amounts of these nutrients on the label.

Those food products in the market with nutrition labeling are placed by the manufacturers voluntarily. Unfortunately, there is no common format for nutrient declaration. There are also errors in some of these labels.

The second value in those categories is Trust

It is a moral responsibility for everyone in the performance of their duties and their social, political and economic lives. The essence of the trust is the sense of accountability.

The third value is Sincerity

The performance of duties (to perfection) requires that individuals do it with sincerity and devotion. Such ethical code results in more efficiency as well as a high rate of productivity. It also discourages manipulation or exploitation of others for personal gains.

The fourth in those categories is Brotherhood

Brotherhood leads to teamwork which is needed in behaviour of co-workers, especially in business. Good relationships create favourable working conditions and leads to efficiency and productivity.

The fifth in those categories is Science and Knowledge

In order to keep up with the competition both domestically and internationally, science and technology must be emphasized and is considered as part of standard performance.

And the last but not the least importance is Justice

Just is undoubtedly a pre-requisite of business and trade as it encompassed at the entire gamut of human life. It means that everyone should be treated as he deserves, without any undue pressure or discrimination.

In fact, even in all retail Sales and Purchase transaction, a Muslim vendor selling a to a Muslim purchaser would reply, "I am buying from you." At a glance these declarations seem trivial but deeper analysis would show that vendor declares that he is selling the goods, good, clean and complete; and the purchaser accepts the declaration because he knows that in the eyes of God, if the vendor delivers the goods which are not good, clean and complete, he shall be answerable in the after life, but of course, if he is caught he shall be answerable in this life also.

Consumerism in Islam is not only having rights to knowledge and information, rights to choice and so forth, but it is also the consumers' responsibility to earn those rights. There are eight international consumer rights promoted by Consumers

International, these need to be observed.

- The Right to Satisfaction of Basic Needs: to have access to basic, essential goods and services, adequate food, clothing, shelter, health care, education and sanitation.
- The Right to Safety: to be protected against products, production processes and services which are hazardous to health or life.
- The Right to be Informed: to be given the facts needed to make an informed choice and to be protected against dishonest or misleading advertising or labeling.
- The Right to Choose: to be able to select from a range of products and services offered at competitive prices with an assurance of satisfactory quality.
- The Right to be Heard: to have consumer interests represented in the making and execution of government policy, and in the development of products and services.
- The Right to Redress: to receive fair settlement of just claims, including compensation for misrepresentation, shoddy goods or unsatisfactory services.
- The Right to Consumer Education: to acquire knowledge and skills needed to make informed, confident choices about goods and services, while being aware of basic consumer rights and responsibilities and how to act on them.
- The Right to Healthy Environment: to live and work in an environment which is non-threatening to the well being of present and future generations.

It is actually the responsibility of the sellers/producers, the consumers, the Government to make sure that products in the market are safe and clean to be consumed by all. Muslim consumers have high expectation of the products in the market and therefore, what is good or acceptable to Muslim consumers is actually double assurance for non-Muslim consumers.

More so the labeling of foods produced using gene technology is not only essential it is our right. Should the Government and the authorities support the food industry and not introduce a standard that requires genetically engineered foods to be labeled, it is falling in its primary legal responsibility to protect public health and safety. Failure to label genetically modified food can also be seen as government not honouring its human rights responsibilities under international charters. Comprehensive and honest labeling is a question of human rights.

Realising this, and to fulfill the initial need of the Muslim consumers, the Halal Certification was introduced. Food outlets and food manufacturers are advised to comply with the Halal requirement. The Result: Muslim food consumers immediately converge to the Halal outlets secure in the knowledge that the *food* to them conforms to Islamic requirements.

But still to them this is not sufficient. The Halal signs displayed in from of the food outlets should not only serve to inform the customers that meat sold in the outlet comes from animals slaughtered the Muslim way. The sign must serve as proof that even the ways the meat is prepared into food, the cleansing of the meat, the cleansing of the utensils, the cooks themselves and finally the plates, the glasses, the spoons and knives, and the cups and saucers have all have been cleansed the Muslim way. Understandably so, for the Muslim consumers, they must also be given the knowledge to what/which products are acceptable for their consumption. Therefore, proper labeling on the products must be enforced so those Muslim consumers are very aware of what is unlawful to them according to the Islamic Laws.

Therefore, information given on labels can be useful and valuable to consumers if the following are considered:

- **Information given must also state the actual contents of the products – (not in codified form)**
- **Authentically and legitimacy of information given (certification by proper authorities).**
- **Must be precise and easy to understand – (language understandable by locals);**
- **Labels must be visible to be easily read (positioning of labels on products);**
- **Manufacturers' recommended retail price should be included;**
- **Information on chemicals used for any form of treatment should be included in common language, nor technical nor formula;**
- **Recommended procedure for neutralizing the effect of the chemical used must be included;**
- **Information on color ingredient must be included**

International Code:

Article 9 amongst others stated that labels of food products must state:-

a) The ingredients used;

b) The composition/analysis of the product;

c) The storage conditions required;

d) The batch number and expiry date.

Consumers need to be given the correct information, good value, good quality of goods in the market. These are the important characteristics of good and healthy business considered to be accepted universally together with a good standard. With this clearly outlined, the consumers are exposed to make their best decision based on the criteria set forth.

In fact it is not just Muslim consumers who have expectations, others, too have expectations. When Allah says in the Quran:-

Give just measures, and cause no loss (to others by fraud). And weigh which scales true and upright. And withhold not things justly due to man, (....) {Surah 26 – 181 to 183}.

He had implied expectations of all consumers.

A situation took place when Umar Al-Khattab punished a man who was selling milk diluted with water. Umar poured out the man's milk not because it was unfit for drinking but rather because the consumer would not know the relative quantities of milk and water (ibn Taymiyah, pg 65), hence Muslim consumers expect businessman they deal with to be forthright and to reveal any defect, prior to sale.

The Standards to labeling requirements in Malaysia today specifies that all perishable food products must have labels which provide information on the ingredients used, the expiry dates and, if imported the name of the importer. The labels must also specify the country of origin, the appropriate information with regard to food content, whether foods are compounded, mixed, or blended, the minimum quantity stated in net weight or measure, and the name and address of the manufacturer and seller.

Meat and meat products requiring certification by foreign veterinary officers, are also subject to approval for import by an authorized State Veterinary Officer. All imported beef and poultry products must originate from facilities which have been approved by Malaysian authorities as halal.

Islam has introduced the concept of slaughter, whereby a naturally halal animal would have to be properly slaughtered prior consumption. The act of slaughtering is to endure the quality of meat and to avoid any microbial contamination. For example a dead unslaughtered animal is normally associated with disease. Most disease originated are carried in the animals blood. Therefore slaughtering is mandatory to ensure the complete drainage of blood from the animal's body thus minimizing the chance of microbial infection.

Even to the extend of the terms of language used for labeling, both English and Malay are permitted in imports. Pictorial illustrations are also permitted, but must not mislead consumers as to the true nature or origin of food.

The regulations also specifies that foods which have defined standards must be labeled to conform to these standards and be free from foreign substances. Packages of food described as "enriched", "fortified" or "vitaminised", must show the quantities or vitamins and minerals added per pound, ounce, or fluid ounce. There are specific requirements regarding the lettering used in printing labels (including sizes) and regarding the use of printed and/or pictorial material. Special labels are required for certain foods, such as diabetic food, margerine, coffee mixtures, vinegar, milk and milk products.

While processed foods can contain hidden sources of ingredients that may be a problem to particular special needs groups, processes of production such as genetic engineering, or irradiation, may cause problems because of substances produced that can result in adverse reactions. This can be overcome by preparing food at home using only fresh produce. However, when food staples are produced using any form of gene technology, there are very real dangers facing those with special food needs.

Most people with severe allergy or food sensitivity do not purchase processed foods, they need to be very specific about what is in the food they eat as 'hidden' sources can affect them badly. Instead, these people usually purchase fresh whole foods and do their own cooking. Until now this has been a safe option.

Gene technology is about to change all of that. What you see may not be what you are accustomed to getting. There may now be hidden sources of allergens in fresh produce that was once avoided by purchasing fresh whole foods. For those with food allergy this can be especially dangerous as gene technology is producing substances never been encountered in nature. Genetically modified food may contain pieces of DNA, antibiotic resistance genes, enzymes, small proteins or protein like substances that are capable of triggering allergy or allergy-like reactions. It is for this reason that labeling of foods produced by gene technology must be introduced

and honesty in labeling covered by food standards.

It is very glaringly noticeable here that fresh farm vegetables have been forgotten and conspicuously omitted in the Standards. Nothing has been mentioned about information on chemicals applied to fresh farm vegetables and the necessity of specifying the methods of cleansing and neutralizing the harmful effect of the chemicals. Another noticeable absence is the need for information on colourings and the colouring ingredients as well as the source of the ingredients, i.e. what the ingredients made from.

There are many arguments to support the labeling of food that has been genetically modified in some way. The safety of genetically modified foods has not been proven, and there is:

- No history of use – safe or otherwise;
- No date supporting safe use;
- No acknowledgement of the limitations of toxicology testing;
- No acknowledgment of the incomplete understanding of some systems of the human body.

Another information about consumer items that seems to have been unjustifiably omitted is the price label. Of course, we see on these items, the retailers' price tags but what would have been ideal would be the manufacturers' retail price recommendation.

Needless to say, whatever the requirements of laws and regulations, without the inculcation of the responsibilities of the manufacturers and suppliers towards the consumers, the consumers, including children and families of the manufacturers and suppliers themselves, would still be at the losing end.

To mention a few examples of irresponsibilities, there are companies which are breaking the rules even by designing labels of infant formula with attractive images text that they might influence mothers to opt for bottle feeding rather that breastfeeding. Many labels minimize the superiority of breastfeeding statement and warnings about health hazards are often missing. Labels of follow-up milks and complementary foods often discourage sustained breastfeeding and do not include all the information necessary for proper use of the products.

So look into the need and expectation of world consumers and the one third of the world consumers who are Muslim Consumers and the rights and responsibilities

Islamic Consumerism, the Muslim Consumers Association of Malaysia, the Malaysian Chapter of the World Muslim Consumers Association, had commissioned a series of studies to equilibrate between the economic principles and methodologies of existing Quality Improvement Systems with divine rules and religious moral values, for those serving these consumers.

The series of studies resulted in the development of the Universal Integrated Systems ISI 2020 which has been formulated to establish, document, implement and maintain a value improvement systems that encompass all aspects of life based on five (5) broad criteria:-

i. Absolute of truth, sincerity, justice and fairness;

ii. A multiple dimensional outlook on Humanities;

iii. Wholesome in all sectors and application;

iv. Encompassing all existing technology for future advancement and development;

v. Transcendence of space and time.

ISI 2020 imposes awareness of man's responsibilities; that is

- **Responsibilities of Man to Himself**
- **Responsibilities of Man to his Fellowman;**
- **Responsibilities of Man to the Environment; and**
- **Responsibilities of Man to his Creator (Allah).**

The value extracted from the Core Principles of the generic Standards are included into the awareness of each and every individual involved in the running of the Company or Organization by mandatory trainings and inculcation of the values and principles through constant reminder of awareness by verbal and written pledges and signages. When every personnel of the company understands his responsibilities to other fellow human in the Company, be they workers or stakeholders, it reduces the worker-manager conflicts; the "albatross" of any organization.

Similarly, when manufacturers, suppliers and retailers understand their responsibilities and relationship to fellow human, the legislation of consumer protection laws would be reduced to mere regulatory.

Biotechnology

Genetic Engineering – The Other Side of the Coin

Presented by Jennifer Mourin, Campaigns and Media Coordinator, Pesticide Action Network (PAN) Asia and the Pacific

Introduction

Genetic engineering (GE) as been promoted as the panacea or solution for all our problems: in terms of feeding the world, stopping a growing hunger crises, and the answer to our food and crop production, and environmental pollution woes.

According to the companies investing and pushing this technology, it seems there is nothing that cannot be solved with GE, and those would dare to stop or even attempt to slow down the march of the GE progress are "techno-phobes" and "luddites"—all fundamentally archaic in our perceptions of science. GE is being promoted using the name of "sound science" and who are we to question science?

In fact, the growing tide of resistance to GE among consumers and ordinary folk is being ascribed to "foolishness", "ignorance" and "unreasoned fear". The critics of GE—the growing group of organized activists, NGOs, Peasant/Farmer groups, Consumer groups, Women's groups and the rare independent scientists—are being labelled "fear mongers", "self indulgent", and even "terrorists", with 'blood on our hands' for tacitly denying millions of people a solution to hunger, and for allowing millions of babies to go blind, malnutrition or to die of starvation!.

But what is the other side to the story – the other perspective? Why have there been protests and resistance to GE? And what lies behind the scepticism and concerns raised in resistance to the billion-dollar advertising and promotional campaigns of the GE companies?

Green Revolution - A Legacy of Poisons

History is said to teach us lessons, unfortunately it is lessons we often forget, and do not lean from. But let us take a step back and examine another example of technological "wizardry" that was sold to us in pretty much the same way.

Pesticides are toxic chemicals deliberately added to our environment. They are poisons by design, whose purpose is to kill or harm living things. They can kill or harm human beings as well. And while the problems of pesticide poisoning of human and environmental health is very well known, pesticides continue to be promoted in

the name of increasing production.

It is estimated that already 25 million workers suffer from pesticide poisoning annually[1]. Farmers and agricultural workers are exposed to pesticides directly when mixing and spraying these pesticides. Communities and consumers are insidiously exposed to pesticides through contamination of the soil, air and water. The chronic effects of pesticides are particularly alarming. There is mounting evidence that organochlorine compounds can act as hormones. In fact, new studies have linked certain pesticides to endocrine disruption, cancer (testicular, prostate, breast and vaginal cancer), lowered fertility (lower sperm count and sperm deformities in men; and endometriosis in women), increase in defects in male sex organs; disruption to child development and growth, and to suppression of immune systems.[2]

In many areas, the agro-ecological balance has been severely disrupted by intensification programmes that involved heavy reliance on pesticides. Populations of natural enemies of pests disappeared as a result of intensive spraying. This combined with pest resistance to pesticides caused a crisis where more and more pesticides were used without preventing a decline in production.

The Green Revolution initiated in the 1960s—promoting the use of high-yielding varieties and intensive chemical farm inputs like pesticides—has in reality left a legacy of poisoned food, ravaged lands, millions of small farmers landless or near landless and hungry. It also promoted monoculture farming, displaced local crop varieties and drastically reduced natural biodiversity on which communities everywhere depend for their food and livelihoods.

In short, it created health and environmental problems and undermined food security for millions, particularly the poor.

Agriculture and Food Production INC.

Since the early 1980s many Asian countries have had to liberalise their economies through the impositions of the WB/IMF, specifically via Structural Adjustment Programmes. The recent economic crisis in Asia further entrenched the liberalisation policy through the bail out packages of IMF.

1 Jeyaratnam. J., "Acute Pesticide Poisoning: A Major Global Health Problem", World Health Statistic Quarterly 43, (1990), 139-143.

2 Colborn. T., Dumanoski D. & J.P. Myers (1996). Our Stolen Future. Penguin Books. And, Hileman, B., "Environmental Estrogens Linked to Reproductive Abnormalities, Cancer"; C&EN (31 January): 19 - 23.

The impact of the infamous GATT/Uruguay Round and the institutionalising of the World Trade Organisation and the related Agreements under its auspices, has affected food security and agriculture. This is being acutely felt by almost all countries in Asia, but particularly by small farmers and farming families in the rural areas. More often than not, the Southern countries end up importing from countries that produce the products more cheaply. The implications of this are often disastrous to food security and to the millions of small farmers and women who depend on the land for their livelihood and sustenance.

To compete in this "unlevel" playing field in agriculture, countries in Asia are moving rapidly to intensify agricultural production for the export market, increasing use of pesticides, pushing the introduction of hazardous technologies such as genetic engineering and encouraging large-scale corporate farming.

Enter the Gene Revolution

The Gene Revolution claims to solve most of the problems created by the Green Revolution. Using genetic engineering in agriculture and driven by some of the world's largest agrochemical corporations—now calling themselves the "Life Science Industries"—the Gene Revolution promises to provide healthy food, reduce the use of chemicals in agriculture, and "feed the world's hungry". But in reality the Gene Revolution portends the entrenchment, and worsening of the Green Revolution legacy—especially on the lives of millions of impoverished rural peasant farmers around the world.

Essentially, genetic engineering is a technology and medium of globalization—the latest phase of corporate-driven processes carried out over the last century to restructure national economies, global trade and finance primarily for the benefit of big business. Genetic engineering innovations are occurring within global industries, for example, agribusiness and pharmaceuticals. Like other technologies of globalization (e.g. information technology and transport), genetic engineering is embedded in an international technology system that fans outwards from the so-called triad centers of technology development—the U.S., (western) Europe and Japan. Central to western market expansion, by 1979 this 'international technology system' had become dominated by multinational (MNCs) and/or transnational corporations (TNCs).[3]

3 Hindmarsh. R., "The Bio-Industrial Complex: Globalization, Strategies, Genethics", Say No to Genetically Engineered Food, PAN AP Safe Food Campaign Kit 1998.

TNCs – Age of the New Pharaohs?

Globalization of agriculture is tantamount to its corporatization. And in the last few decades TNCs have become major players, determining global development policy and direction of agriculture (especially in the South) for example at the WTO ministerial, as well as influencing food safety standards. Of particular concern has been the influence of TNC representatives at the Codex Alimentarius Committee meetings—essentially setting global food safety standards!

Since the early trends in the 1970s, the pesticides industry has gone through a period of consolidation. In the past decade, the worldwide value of corporate mergers and acquisitions increased from US$462 billion in 1990 to over US$3.5 trillion in 2000, roughly 12 per cent of total world economic output. This concentration of corporate power has affected most sectors of the global economy at the same time as disparities between the rich and poor have grown sharply: according to the United Nations Development Programme, the richest 1 per cent of the world's population receives as much income as the poorest 57 per cent.[4]

The agriculture industry has been affected by such concentration: the top 2 companies control 34 per cent of the global agrochemical market; the top 10 seed firms now control 30 per cent of the US$24.4 billion commercial seed market, and the top 10 agrochemical corporations control 84 per cent of the US$30 billion agrochemical market.

Following two decades of fast-paced mergers and acquisitions, five major "Gene Giants" dominate the market: Pharmacia[5] (Monsanto), DuPont, Syngenta, Aventis and Dow. Although some companies such as Novartis, AstraZeneca[6] and Pharmacia have sold off their ag-biotech interests, the German-based agrochemical companies Bayer and BASF each announced plans in the past year to invest heavily in ag-biotech/genetic engineering.

The closely interlinked nature of the 'ag-biotech', seed and agrochemical industries is clear: seven top ag biotech companies or "Gene Giants" (the top five mentioned above, plus Bayer and BASF) rank as the world's top seven agrochemical corporations. These seven Gene Giants also rank among the world's top 10 seed

4 ETC Group (Action Group on Erosion, Technology and Concentration), "Globalization Inc. — Concentration in Corporate Power: The Unmentioned Agenda" July/August, 2001, available at http://www.rafi.org.

5 When Pharmacia acquired Monsanto in November 1999 it quickly spun off the ag biotech company as a detached agribusiness unit. However, Pharmacia retains 86% control of the new, independent entity.

6 Novartis' seed and agrochemical division merged with AstraZeneca in 2000, and spun off as 'Syngenta'.

Top 10 Agrochemical Companies

Company	Agchem Sales in US$ millions	% share of world market
1. Syngenta (Novartis + AstraZeneca)	$6,100	20%
2. Pharmacia (Monsanto)	$4,100	14%
3. Aventis (AgrEvo +Rhone Poulenc)	$3,400	11%
4. BASF (+ Cyanamid)	$3,400	11%
5. DuPont	$2,500	8%
6. Bayer	$2,100	7%
7. Dow AgroSciences	$2,100	7%
8. Makhteshim-Agan	$675	2%
9. Sumitomo	$625	2%
10. FMC	$575	2%

Source: ETC Group, based on data provided by Allan Woodburn Associates cited in Agrow.

Top 10 Seed Companies

Company	Seed Sales in US$ millions
1. DuPont (Pioneer) USA	$1,938
2. Pharmacia (Monsanto) USA	$1,600
3. Syngenta (Switzerland)	$958
4. Groupe Limagrain (France)	$622
5. Grupo Pulsar (Seminis) Mexico	$474
6. Advanta (AstraZeneca and Cosun), UK and Netherlands	$373
7. Dow (+ Cargill North America) USA	$350 estimate
8. KWS AG (Germany)	$332
9. Delta & Pine Land (USA)	$301
10. Aventis (France)	$267

Source: ETC Group

corporations. The top two companies-Syngenta and Pharmacia-control 34 per cent of the global agrochemical market, valued at US$29,880 million in 2000.[7]

The furiosity of the mergers, and buyouts, is best reflected by the fact that on October 2, 2001, Bayer announce its buyout of Aventis, taking it to the No. 2 rank of the Agri-biotech/GE trade.

In addition, there is the spectre of the world's largest food and beverage corporations with an appetite for acquisitions in the food industry. The food and beverage industry posted record-breaking levels of consolidation over the past year, according to MergerStat. In the 12 months ended June 1 2001, the value of food industry mergers reached $69.2 billion. For the five preceding years, the value of all food industry mergers combined totalled only $50.1 billion.[7] According to Paul Rogers, editor of Prepared Foods, the food industry's current merger and acquisition spree is not just about acquiring to get bigger. Companies are buying because they need to defend existing brands, buy complimentary brand names, and expand in geographic areas where they are weak. Most importantly, they are positioning themselves to counter consolidation on the supermarket side of the business. But even the largest food and beverage firms are dwarfed by the economic muscle of a food retailer like Wal-Mart—which is second only to Exxon Mobil as the world's largest corporation. If the biotech industry gets its way, it will unleash a new generation of biotech products offering perceived health, nutrition and lifestyle benefits for consumers. It remains to be seen when and if food and beverage enterprises and mega-retailers will buy into biotech.[7]

As explained by the Action Group on Erosion, Technology and Concentration of Canada, *"Corporate hegemony is overwhelming governments and subverting national sovereignty. When governments become subservient to corporations instead of citizens, democracy is undermined, diversity is destroyed, and human rights are jeopardized. The trend in corporate consolidation is mirrored by growing disparities between rich and poor, both within and between OECD nations and the South."*

The Problem with Genetic Engineering

What is GE?

Genetic Engineering refers to all technologies that artificially move genes from one organism to another, often from one species to another, to produce 'new' or 'novel' organisms. These techniques involve highly sophisticated manipulation of

7 Rogers. P., 'Deal a Meal,' Prepared Foods, July 2001, http://www.preparedfoods.com Note: the M&A activity monitored by MergerStat tracks only deals involving at least one US-based partner. The total value of global M&A is much higher.

genetic material and other biologically important chemicals, that change the DNA of living organisms.

DNA is the blueprint that determines the characteristics of all organisms – for plants, insects, animals, and human beings. What an organism looks like, its life and growth (also called 'traits') depends on its DNA. The segments of DNA which have been associated with the specific features or functions of an organism are called genes.

With genetic engineering, genes are manipulated and **'modified'** or **'altered'**. The technology involves the direct transfer of genes made up of DNA (traits) from one organism to another via a kind of "cut" and "paste" (or "splice") process.

So by "cutting" and "splicing" DNA, scientists can *genetically engineer* the transfer of genes from one type of organism (or species) into any other organism (or species) on earth. Where the donor organism and recipient organism are from different species, the resulting genetically engineered organism is called ***'transgenic'.*** Through genetic engineering, scientists can move genes across natural boundaries. The resulting organisms can have new combinations of genes – and therefore new combinations of traits – that are not found in nature. The process of disarranging and recombining gene fragments of unrelated species in order to 'design' new organisms is also known as ***'recombinant DNA technologies'***.

GE crops are plants with DNA in which bioengineers have inserted one or more genes. GE foods contain ingredients made from GE crops, or other applications of GE. Genes are templates that cells use to create proteins, which determine many of an organism's characteristics. Changing an organism's genes, therefore, can cause its cells to make new proteins, causing it to exhibit a new trait. For example, a gene that makes a fish resistant to cold, can make a tomato plant create proteins which may similarly give it greater resistance to cold temperatures.

Traditional breeding is another way of getting genes into an organism to cause it to exhibit a new trait. Although the biotechnology industry

Participants of the workshop

would have you believe that GE is just like traditional breeding, it is radically different. In traditional breeding, members of the same or very similar species are crossed to create offspring with some novel trait. This greatly limits the genes that can be combined. Furthermore, when different but similar species are crossed, their offspring are generally infertile—preventing inter-species gene combinations from propagating in the wild. For example, a donkey and a mare can make a mule, but the mule will be infertile, the end of the line for the combined genes.

GE smashes these natural barriers! Using GE, *any gene from any plant, animal, bacterium, fungus or virus can be inserted into the DNA in reproductive cells of any other organism.* If the resulting organism survives, it generally can pass on its altered DNA, and whatever new traits it causes, through normal reproduction. For example, GE enables scientists to create pigs which have human genes, genes which will be passed on to future generations of GE pigs.

GE - Basic Weaknesses:

- ***Lack of Information:*** There has been no long term, independent research into the 'safety' of genetically engineered food products or crops. Practically all the information and studies available are generated by the very industry promoting the products and crops.
- ***An Imprecise Technology*** — Genetic Engineering can move genes from one organism to another. A gene can be cut precisely from the DNA of an organism, but the genetic engineer has no idea where (or even if) the gene will be inserted in the DNA of the recipient organism, neither are they aware of the possible repercussions.
- ***Side Effects*** — The new gene may have unintended effects. Genes produce proteins which usually have specific purposes but in a different organism the new protein could have altered properties and new or added effects which are not intended or foreseen. Scientists don't know enough about living systems to perform DNA surgery without causing mutations and changes in the organism that could have dire effects. In the U.S., government researchers inserted human growth hormones into pigs in order to grow bigger pigs - they instead grew pigs with poor vision, arthritis, stomach ulcers, muscular weakness, lethargy and impotence.
- ***Widespread Crop Failure*** — Genetic engineers intend to make money by patenting genetically engineered seeds. This means that when a farmer plants genetically engineered seeds, all the seeds have identical genetic structure, unlike with regular crops. As a result, if a fungus, a virus, or a pest develops which can attack this particular crop, there could be widespread crop failure.

- ***Threats To Our Entire Food System*** — Insects, birds and wind can carry genetically altered seeds into neighbouring fields and beyond. Once transgenic plants pollinate, genetically original plants and wild relatives can be cross-pollinated. All crops, organic and non-organic, are vulnerable to contamination from gene drift.

Health Hazards:

- ***No Long-Term Safety Testing*** — Genetic engineering changes the fundamental nature of the food we eat. It uses material from organisms that have never been part of the human food supply. Without long-term testing, no one knows if these foods are safe.
- ***Toxins*** — Genetic engineering can cause unexpected mutations in an organism, which can create new and higher levels of toxins or poisons in foods.
- ***Allergic Reactions*** — Genetic engineering can also produce unforeseen and unknown allergens in foods. A study by scientists at the university of Nebraska shows that soybeans genetically engineered to contain Brazil-nut proteins caused reactions in people who were allergic to Brazil nuts.
- ***Side Effects can Kill*** — 37 people died, 1500 were partially paralysed, and 5000 more were temporarily disabled by a syndrome that was finally linked to "L- tryptophan", a food supplement made by genetically-engineered bacteria.
- ***Antibiotic Resistant Bacteria*** — Genetic engineers use antibiotic-resistance genes to mark genetically engineered crops. This means that the crops contain genes which confer resistance to antibiotics. These genes may be picked up by bacteria which may infect us.
- ***Decreased Nutritional Value*** — Transgenic foods may mislead consumers with counterfeit freshness. A luscious-looking, bright red tomato could be several weeks old and of little nutritional worth.
- ***Problems Cannot Be Traced*** — Without labels, our public health agencies are powerless to trace problems of any kind back to their source. The potential for tragedy is staggering.

Pollution:

- ***Increased Use of Herbicides*** — More than 50% of crops developed by companies have been engineered to be resistant to herbicides. Scientists

estimate that plants genetically engineered to be herbicide-resistant will actually triple the amount of herbicide use. Farmers, knowing that their crops can tolerate the herbicides, will use them more liberally.

- ***More Pesticides*** — Crops are now also being engineered to produce their own pesticides. This will promote more rapid appearance of resistant insects. This strategy will put more pesticides in our fields (and lead to destruction of useful insects and soil organisms), and in our food – which could be harmful to human health.
- ***Ecology May Be Damaged*** — The influence of a genetically engineered organism on the food chain may damage the local ecology. The new organism may compete successfully with wild relatives, causing unforeseen changes in the environment, and possibly wipe them out.
- ***Gene Pollution Cannot Be Cleaned Up*** — Once genetically engineered organisms, bacteria and viruses are released into the environment it is impossible to contain or recall them. The negative effects are irreversible.

The Myth of "Substantial Equivalence

Undertaken on the basis of bettering what occurs and is grown naturally, genetic engineers and corporations site "novelty" to claim patents and ownership of their genetically modified produce. But when it comes to selling these produce they contradict their own claims by stating that genetically engineered produce are "substantially equivalent" to natural produce–hoping to sooth doubts, silence dissenting voices, and justify their refusal to segregate, label, and market their produce as 'genetically modified'. These contradictions abound and debates over the safety, and need, of genetically engineered food produce have raged all over U.S., Europe, and Japan. Concerns and doubts over the "miracles" of genetically engineered food produce are growing globally.

Why 'Substantial Equivalence'? To be reliable, the testing demanded by food safety experts would have cost millions of dollar in each case. In addition, it would have delayed their approval for years as such testing takes long time. Billions of dollars had already been invested in the development GE foods and such demands and delays would have made the GE food projects unprofitable. So the Biotech firms were under pressure to find some way to get around these impediments.

The solution was "substantial equivalence" that was invented by legal advisors to facilitate rapid approval procedures for GE foods in USA without any demands on careful testing. It is thus a judicial non-scientific hoax. Unfortunately it was

successfully established globally. This was achieved through strong pressure from the United States Government that made it a national and even a presidential issue to promote its Biotech Multinationals so that they could lead and dominate the biotech sector. U.S. FDA played a key role in officially declaring (1994) that these foods were as safe as natural ones (this they did in spite of warnings by their own experts, who however were silenced.

This shows the danger of political and corporate intervention into judgements and decisions that should be made completely impartially by independent scientists.

During year 2000, *criticism and rejections* of the approval procedure based on "substantial equivalence" began to be expressed by important bodies of scientists. This includes: the US National Academy of Science; its Canadian counterpart, the Royal society and the UK Medical Research Council. It has also recently been revealed that the US Food and Drug Administration (FDA), suppressed serious concerns about the safety of GE foods expressed by its own experts.[8]

In fact, the Physicians and Scientists for Responsible Application of Science and Technology[9] have recommended that, *"foods that have been approved on the basis of the principle of Substantial Equivalence should be declared unsafe and be withdrawn from the market, if it takes time to implement this, mandatory labelling is necessary for all GE foods and food containing GE components in order to facilitate early discovery of unexpected harmful effects. Regulations for securing the safety of food should only be based on impartial scientific considerations. This has obviously not been the case in regulations applying the principle of substantial equivalence. Therefore present regulations concerning GE foods applying this principle should be declared invalid. New regulations should await the conclusion of impartial scientists about the results of extensive investigations required to assess the safety of GE foods for health and environment during the required moratorium on the use of GE foods."*

Could Asia Become a Dumping Ground?

In 1999, the world's two largest food production companies, Unilever UK and Nestle UK announced they would be withdrawing their acceptance of genetically modified foodstuffs. Cadbury followed suit, while Tesco, Britain's largest supermarket chain, said it would remove GM ingredients from its own-brand foods, joining other

8 From Physicians and Scientists for Responsible Application of Science and Technology Website, http://www.psrast.org/, Nov 3, 1998. Last updated Sept 8, 2001.

9 A global network seriously concerned about conditions that are hampering impartial comprehensive, interdisciplinary evaluations of the safety of new applications of science and technology.

supermarket chains like Sainsbury, Safeway, Asda and Somerfield. There has been great concern expressed by consumers in the North, with many campaigns to remove GE foods from supermarkets and stores.

With the growing rejection of GE foods in the UK, Europe and other Northern countries, PAN AP is extremely concerned about the potential that countries in the South, including Malaysia, could become 'dumping' grounds for these products.

A Scandal called 'Starlink'

The discovery in late 2000 that a genetically engineered variety of corn—not approved for human consumption—has inadvertently made its way into human food products in the U.S. and Japan raised widespread alarm in those countries about testing, safety regulation, segregation, and labelling of genetically engineered foods.

In September, an independent scientific laboratory found traces of StarLink corn in samples of taco shells being sold in U.S. supermarkets. More than 300 brands of food products have since been recalled from supermarkets, grocery shelves, and restaurants throughout the US. More products are being recalled and tested even now since the extent of contamination is still unknown.

StarLink corn, created by Aventis CropScience, is not approved for human consumption by the US Environmental Protection Agency (EPA) because it contains the Cry9C protein, which has been classified as a potential allergen.

While hundreds of products have been recalled from US supermarkets and restaurants, the U.S. continues to export corn that may be contaminated with StarLink to Asia, Latin America, and Europe. The U.S. government has officially approved corn contaminated with StarLink for exports when its own regulatory authority is not convinced that StarLink is safe for human consumption.

Turning Farmers into Slaves

The Gene Revolution claims to solve most of the problems created by the Green Revolution. Using genetic engineering in agriculture and driven by some of the world's largest agrochemical corporations, the Gene Revolution promises to provide healthy food, reduce the use of chemicals in agriculture, and "feed the world's hungry". But in reality the Gene Revolution portends the entrenchment, and worsening of the Green Revolution legacy—especially on the millions of impoverished rural peasant farmers around the world.

Genetically altered seeds seriously threaten the livelihoods of over 1.4 billion people who depend on farm-saved seeds and who produce almost 20 per cent of the world's food. These trends will drive farmer's dependency to the limit. The little freedom that was left after the "Green Revolution" disaster will be taken away by the 'Gene Giants'. The monopoly position of the TNCs will ensure no escape: while their crops are hooked on expensive chemicals, farmers will be forced into 'addiction to credit'—at the expense of their freedom and the survival of their families.

Moreover, ongoing research in genetically engineered food is directed at the needs of the corporations, not at the needs of the farmers. Transgenic crops are designed mainly for use in industrial monoculture systems, and will contribute further to degradation of the environment, and resurgence in pest problems. Small farmers will be effected by these side effects while the TNCs reap the profits. Poor farmers in the South, already under pressure from heavily subsidized food imports from the North, this will be driven from their lands to make place for corporate farming. Landlessness and poverty will inevitably go on the rise. [10]

Philippine Farmers Uproot BT corn!

On 29 Aug 2001, at 2:56pm, for the first time in the Philippines, angry farmers led by KMP affiliate SOCOFA, BAYAN MUNA, and other progressive groups, resorted to direct action in their struggle against the imposition of BT corn into their farming communities.

Around 800 farmers in Tampakan, South Cotabato uprooted the BT corn planted by Monsanto in its field trial site in Tampakan South Cotabato last July. Earlier, in a seminar conducted by PAN Philippines, the farmers and representatives from different sectors expressed their frustration at the cavalier attitude of the national government in dismissing their complaints about the planting of BT corn by Monsanto—despite the vigorous objections of the farmers, other sectoral groups, and the local government. They intimated that they might have to resort to a more drastic action to express their serious opposition to Monsanto's forcing their BT corn into their area. They are appealing for support from other concerned groups so that they could sustain their anti-GMO campaign and to protect their members from harassment because of their direct action.

In a press conference today in Quezon City, the Kilusang Magbubukid ng Pilipinas (KMP) urged the Philippine Congress to intervene on the on-going illegal field trials of the Bt-corn conducted by Monsanto. The group also demanded for appropriate actions and punishment to all those responsible for such and a complete halt in the entry of GMOs in the country, stating its immense threat to food security, the people's sovereignty, the environment and human health.

Source: Message from Dr. Romeo Quijano, President PAN Philippines, and Press Release from Kilusang Magbubukid ng Pilipinas (KMP-Peasants Movement of the Philippines)

10 Rafael Mariano, Chariperson of the Peasant Movement of the Philippines, Keynote Address to the "Citizens Protecting Health and the Environment, Regional Workshop on Genetic Engineering, March 30-April 1, 2000.

Impacts on agriculture and farmers

GE crops and foods pose serious risks to health and the environment, but they also mean trouble for all kinds of farmers. These problems include:

- **Loss of markets** - As consumers around the world increasingly say no to GE foods, farmers are losing markets, and are forced to bear the financial and logistical burdens of testing and segregating crops. In 1996, U.S. farmers sold $3 billion worth of corn and soybeans to Europe. In 1999, those exports had shrunk to $1 billion. In fact, the European Union has enacted a moratorium on importing new biotech food products. And Japan's new labelling law will no doubt have enormous ramifications!
- **Loss of independence** - GE crops extend agribusiness's control over seeds, and therefore its control over farmers. Worldwide, about 1.4 billion farmers save seeds, freely replanting, trading and sharing them, as well as breeding them to create strains that are well suited to local conditions. Building on the commercialisation of modern hybrids, which produce unsuitable seeds and thus require farmers to purchase new seed every year, GE crops entail far-reaching restrictions on farmers' use of seeds. GE seeds are licensed, not owned, generally for one season. The farmer can eat or sell the harvest, but cannot use the seeds produced by the crop. In fact, Monsanto has brought legal action against hundreds of farmers to assert its control over how seeds are used. New technology under development will soon allow these restrictions to be enforced biologically.

Percy Vs Monsanto!

But even growers who do not plant GE crops may face market problems from possible contamination by nearby GE crops (via pollen) and from accidental co-mingling of seeds—and face the wrath of the TNCs.

Take the case of Percy Schmeiser. A canola farmer from Canada, Mr. Schmeiser was sued by Monsanto for allegedly 'illegally' planting their herbicide tolerant GE canola. He has counter-sued the company: categorically refuting ever buying, using or saving any of Monsanto's seeds. He argued instead that his field was contaminated by Monsanto's GE canola via cross pollination.

Sadly, on March 29, 2001, a Canadian judge dealt a crushing blow to Farmers' Rights by ruling that Schmeiser, a third generation Saskatchewan farmer, must pay

Monsanto thousands of dollars for violating the corporation's monopoly patent on genetically engineered (GE) canola seed.[11]

Under Canadian patent law, as in the U.S. and many other industrialized countries, it is illegal for farmers to re-use patented seed, or to grow Monsanto's GE seed without signing a licensing agreement. If the biotechnology corporations and U.S. Trade Reps get their way, every nation in the world will be forced to adopt patent laws that make seed saving illegal. The ruling against Schmeiser establishes an even more dangerous precedent because it means that farmers can be forced to pay royalties on GE seeds found on their land, even if they didn't buy the seeds or benefit from them.

Percy Schmeiser did not buy Monsanto's patented seed, nor did he obtain the seed illegally. Pollen from genetically engineered canola seeds blew onto his land from neighboring farms. (Percy Schmeiser's neighbors and an estimated 40% of farmers in Western Canada grow GE canola). Monsanto's GE canola genes invaded Schmeiser's farm without his consent. Shortly thereafter, Monsanto's "gene police" invaded his farm and took seed samples without his permission. Percy Schmeiser was a victim of genetic pollution from GE crops—but the court says he must now pay Monsanto US$10,000 for licensing fees and up to US$75,000 in profits from his 1998 crop.

The GE canola that drifted onto Schmeiser's farm was engineered to withstand spraying of Monsanto's proprietary weed killer, Roundup. But Schmeiser did not use Roundup on his canola crop. After all, if Schmeiser had sprayed his crop, the chemical would have killed the majority of his canola plants that were not genetically engineered to tolerate the weed killer! Schmeiser didn't take advantage of Monsanto's GE technology, but the court ruling says he's guilty of using the seed without a licensing agreement.

Enter the "Terminator" and "Traitor"

While Monsanto and other agrochemical companies may not push contracts in developing countries, due to the problem of policing such agreements, said these companies have other insidious ways of trapping farmers into using GE seeds. This includes the development of GE seeds that render crops sterile and/ or control their genetic traits via chemicals.

11 Pesticide Action Network Updates Service, PAN North America, April 6, 2001.

"Terminator" technology": The infamous "Terminator" technology identified by the Rural Advancement Foundation International (RAFI-Canada) in March 1998 is a technique for genetically altering a plant so that the seeds it produces are sterile.

It is a threat to agricultural biodiversity and the well-being of 1.4 billion rural people who depend on farm-saved seed and local plant breeding. In January 1999 RAFI revealed that virtually all the Gene Giants (Monsanto, Novartis, Astra/Zeneca, DuPont, BASF, Rhone Poulenc) are working on their own genetic seed sterility patent claims. Over two dozen new patents reveal that engineered seed sterility is not an isolated research agenda, it's the Holy Grail of the agricultural biotechnology industry.

"Traitor technology" - The new generation of 'terminator'-type of technologies known as genetic-use reduction technology (GURT) work by controlling the traits of GE crops with the application of an external chemical 'inducer'-mixed with the companies proprietary chemical.

"Traitor technology": The new generation of Terminator patents goes beyond the genetic neutering of crops. What RAFI called "Traitor Technology", it is known as genetic-use reduction technology (GURT)—which works by controlling the traits of GE crops with the application of an external chemical 'inducer'-mixed with the companies proprietary chemical. In the not-so-distant future, we may see farmers planting seeds that will develop into productive (but sterile) crops only if sprayed with a carefully prescribed regimen that includes the company's proprietary pesticide, fertilizer or herbicide.

The latest version of Monsanto's suicide seeds will not even germinate unless exposed to a special chemical, while Astra/Zeneca's technologies outline how to engineer crops to become stunted or otherwise impaired if not regularly exposed to the company's chemicals.

In a report by Actionaid, Berne Declaration, Genewatch, and the Swedish Society for Nature Conservation, Syngenta will have the single largest interest in GURTs of the global GE Companies. Out of the 71 Gurts patents identified to date, Syngenta owns 36 or 50 percent.[12]

A Novartis patent (US$ 5,789,214) describes a process for chemically regulating a number of developmental processes in plants-such as germination, sprouting, flowering, fruit ripening, etc. The patent specifically mentions that the chemical regulator can be applied to plants in combination with a fertilizer or herbicide.[13]

Another GE technique is to produce altered nutritional profiles including increasing the content of vitamins, minerals and other micronutrients in rice and altering the protein and amino acid profile. Although these are being used to gain better public acceptance, they offer no direct benefits to consumers and do not offer significant solutions to nutritional problems.

GE crops also pose serious health and environmental risks including serious allergic reactions, and could contribute to the problems of antibiotic resistance as well as genetic pollution and the transfer of GE traits to neighbouring weeds, as a result of naturally occurring gene transfer.

Another major GE application in crops is 'herbicide tolerance', and all indications are that these GE crops are increasing the use of herbicides and not, as the companies claim, reducing herbicide use. For example, the USDA reports that the planting of Monsanto's soyabean tolerant to the herbicide RoundUp (glyphosate) in the USA resulted in a 72 per cent increase in the use of this herbicide on the engineered crop in1997.

Alternatives Do Exist

All over Asia and in many parts of the South, peoples' movements, specifically farmers/peasant movements have grown in strength—women's voices have featured strongly in their calls for safe food, the right to access and control of resources like land, for the right to be food secure and the right to make their own decisions over what they grow.

For example, the Nayakrishi Andolon (New Agriculture Movement) of Bangladesh is a movement for ecological agriculture. It is based on simple principles like no use of pesticides and chemicals, soil management rather than external input of fertilizers, and the practice of mixed cropping and crop rotation for pest management and risk reduction. Mixed cropping is crucial to increase productivity through management of biodiversity. Besides organising the farmers for biodiversity-based agricultural production, the Nayakrishi Andolon is actively involved in raising awareness among people against the harmful effects of pesticides and hybrid seeds. Villages are being declared as pesticide-free. In one district of Tangail, at least 24 villages were declared pesticide-free, in another district Sirajganj, a union comprising 12 villages was declared pesticide-free, and a number of villages in five districts

12 Warwick H. (2000). Synenta: Switching off Farmers' Rights. Actionaid, Berne Declaration, Genewatch, and Swedish Society for Nature Conservation. Research

13 RAFI (1999). Terminators wider implications. RAFI Communique, January/February 1999

are on the way to stopping the use of pesticides. [14] The widespread inception throughout Bangladesh of Nayakrishi Andolon practices potentially reflects the growing disappointment of Bangladeshi farmers with modern agricultural technologies, including GE, and the profiteering motives of agrochemical transnational corporations (TNCs).

The Peoples Caravan 2000, which kicked off in Tamil Nadu, south India, featured the successes of the organic movement of over 6,000 farmers, led by The father of sustainable agriculture in Tamil Nadu, Mr. Namalvar. He stated, "We have already done what has been said to be impossible, to grow food without poisons. We have moved away from hazardous pesticides and fertilisers and made use of available resources to grow our food. I am confident that the whole of Tamil Nadu can produce crops sustainably and profitably. Our aim is to make the villages pesticide free by the end of 2001[15]."

These movements are growing and need support! Specifically, how the various Consumers movements in different countries responds and acts to support their calls and struggles will be a testament to their relevancy and substance. How then are we to reconcile the above onslaught with the dire need for safe food, food security and sustainability? Could Community Supported (Safe) Agriculture be the way forward?

The Malaysian Scenario

Consumers' and other civil society groups in Malaysia face a daunting challenge in terms of the GE issue in Malaysia. This is specifically because:

- The Malaysian government's policy vis-á-vis agriculture is fundamentally one that is based on trade liberalisation and commercial agriculture, and all its major policies have fallen in line with the WTO/AoA and other agreements.
- The government has hence embraced this technology and aims to be the hub for its development and promotion in the Asia Pacific region. In fact, as revealed in the Malaysia Country Report for the recent Southeast Asian Seminar workshop on Public Awareness and Participation in the Cartegena Protocol on Biosafety, biotechnology is said to be, *"one of the five strategic technologies that are expected to accelerate Malaysia's transformation into a highly industrialised nation by the year 2020".*

14 Reintjes C. (2001). ILEIA: Internal travel report. And, Akhter F. (1998). Changing Strategies for Future Action and Solidarity. Asian Exchange, Vol.14(12):pp 83-85

15 Peoples Caravan 2000 Proceedings, PAN Asia Pacific, 2000.

- The planned 'BioMalaysia" International Biotechnology Symposium, Exhibition and Business Partnering in October 2002, is to bring industry and government departments together to discuss Malaysia being the key country for GE developments in Southeast Asia and how the Malaysian government can facilitate this process.

- There have been a series of Conferences organised by the Institute of Islamic Understanding Malaysia (IKIM), including one looking at food security issues from an Islamic perspective –but have ostensibly been foras to gain acceptance of GE within the Islamic intellectuals and scholars. There is an International Conference on "Ethics in the Biotechnology Century" planned for 23-24 October, 2001 by IKIM, with the keynote address by Dato' Seri Dr. Mahathir Mohammed.

- MARDI is already undertaking research and contained experiments on GE crops—including pineapple, papaya, brinjal, and several other local produce. PORIM is currently looking into GE ('enhanced') palm oil, and are due to commercialise by 2007!

- At a recent National Consultative Forum on the Malaysian Biosafety Bill (Law), held on September 20, a scheme of law was presented for inputs by NGOs, the private sector and relevant government departments. While relatively strong this scheme of law it also stands to face "watering down" in terms of its punitive and deterrent aspects, when discussed in parliament. The influence of industry both foreign and local is also a concern e.g. the International Camber of Commerce was represented by an official from Aventis Agri-Corp; while much concern over the perceived 'restrictive' aspects of the law was raised by local biotechnology companies. Notably, the section on Public access to information and input on any application put to the board, which is mandatory in the actual Protocol has been changed to one that is subject to the discretion of the Biosafety Board.

PAN AP and Campaigns for Change!

Not surprisingly resistance to the above-mentioned trends has also been very visible—from the indigenous peoples of Chiapas in Mexico, to farmers and fisher folk of the Assembly of the Poor in Thailand, to the struggles of farmers in India and the Philippines against application to field test transgenic corn. Offices of the "Gene Giants" have been besieged by angry farmers and environmentalists. Initiatives in defense of farm-saved seeds have been launched globally. The global pesticide

reform movement has also been challenged to do more!

And at the grassroots level, PAN AP has continued the struggle against the life threatening and environmentally damaging effects of pesticides via our training workshops, seminars and general information outreach, and particularly via the launch of our community based pesticides monitoring efforts.

A shift to sustainable agriculture and development implies shifts at the farm as well as the larger scientific, economic and political spheres of society. The need for multilevel actions to address the macro-micro linkages and issues of globalisation, pesticides, genetic engineering, the transnational corporations, and the communities impacted—particularly the women!

Campaigns for Change!

The PAN AP Campaign on Genetic Engineering

PAN AP also coordinates the **Campaign on Genetic Engineering** (GE) focusing on information outreach, awareness raising and mobilizing of communities on the potential threats to human health and the environment from the use of GE in agriculture and food production. Fundamental to these concerns are the moral and ethical implications of using this technology to own and manipulate life itself.

The existing campaign includes:

- collaborative information gathering and awareness raising initiatives;
- building and strengthening the networks capacity to respond to the emerging threats, particularly to the grassroots, posed by GE in the region;
- the building and strengthening of mobilisation and resistance—especially at the grassroots level (amongst farmers, peasants, consumers, and women's groups)—against GE, in support of the wider movement against this technology, and in recognition of the emerging regional peoples movements.

Over the next three years, PAN AP will explore and initiate 'special' areas of focus and action, within the key arena of struggle over food production and consumption issues for farmers and the grassroots. In keeping with the main focus of PAN AP, an area of emphasis of the GE Campaign will be on pesticide related GE developments.

The TNC Campaign

The planned PAN AP Campaign on TNCs will be a culmination, and integration, of PAN AP's long history of challenging the agrochemical industry—its influence and practices, the devastating impacts of its products on millions of farmers, farming communities and plantation workers, predominantly in the South. The focus on Industry would also take stock of this, and provide analysis, and hopefully provide fuel for renewed organizing, and directing our efforts at resisting TNCs. Components of the Campaign include:

- *Research* - Profiles on the top 5 Agro-chemical TNCs.
- Alliance Building and Actions - the establishment of the 'International Alliance Against Agrochemical TNCs', as a tool to concentrate on building solidarity, alliances and fostering adequate support systems and actions against agrochemical TNCs.
- *Specific Action* - hosting of 'The Peoples Tribunal on Pesticides Exposure and Contamination', to give a space and voice to victims and survivors of pesticides exposure in 2003.

The Peoples Caravan

The People's Caravan 2000 - "Citizens' on the Move for Land and Food Without Poisons!" - brought PAN AP together with partner groups in facilitating a grassroots-led, mass mobilization, awareness raising and alternatives initiative—calling for an end to the devastating effects from the globalisation of agriculture and instead advocated genuine agrarian reform, food security, social justice and land and food without poisons.

The Caravan traveled over 2,500 kilometers through Tamil Nadu, India from November 13-18, Bangladesh from November 18-24 and within Manila, the Philippines from November 26-30. Simultaneous events were held in Japan, Korea and Indonesia, with farmer representatives participating in the activities in the Philippines.

Featuring grassroots speakers and communities including peasant farmers, fishers folk, landless farmers, agricultural workers, the Caravan also involved students, scientists, teachers, the media, government officials, policy makers, and anti-pesticide and anti-genetic engineering advocates

The themes of the Caravan included: challenging globalisation; the reality of the landless; pesticide use and Asia's collapsing agricultural sector; concern over genetic engineering; and embracing sustainable agriculture and indigenous agricultural

knowledge.

Noteworthy was the encouragement given for women's voices and inputs to be heard and taken note of during the caravan. Women addressed the crowds highlighting such issues as the call for land reform and equal wages for women agricultural workers; and the poisoning cases of cash-crop farm workers, many of whom are women and children. They also made calls for their communities to stop using pesticides and to reject the agricultural technologies of transnational corporations (TNCs) such as genetic engineering.

The Caravan was organised by PAN AP; Society for Rural Education and Development (SRED) and Tamil Nadu Women's Forum (TNWF), India; UBINIG (Policy Research Centre for Development Alternatives) and Nayakrishi Andolon (New Agriculture Movement), Bangladesh; and Kilusang Magbubukid Ng Pilipinas (KMP – Peasant Movement of the Philippines); in collaboration with SHISUK, Bangladesh; CIKS and PREPARE, India; Gita Pertiwi, Indonesia; NESSFE Japan; CACPK, Korea; and Food First, U.S.A.

Food Labelling

"For Malaysian Consumers"
-presented by Mr. Sivananthan, ERA Consumer Malaysia

Food labeling should be considered a fundamental responsibility of a food manufacturer and food distributor. Consumers have a right to know what are the ingredients used to produce the food at hand and whether there are any ingredients that they do not want to consume due to religious or health reasons. This paper generally explores various forms of food labeling considerations.

Following are some information that have been adopted as vital information that should be put on a label:

- nutrition information
- easy-to-read formats that enable consumers to quickly find the information they need to make healthy food choices
- information on the amount per serving of saturated fat, cholesterol, dietary fibre, and other nutrients of major health concern
- nutrient reference values, expressed as % Daily Values, that help consumers see how a food fits into an overall daily diet
- uniform definitions for terms that describe a food's nutrient content—such as "light," "low-fat," and "high-fibre"—to ensure that such terms mean the same for any product on which they appear
- claims about the relationship between a nutrient or food and a disease or health-related condition, such as calcium and osteoporosis, and fat and cancer. These are helpful for people who are concerned about eating foods that may help keep them healthier
- standardized serving sizes that make nutritional comparisons of similar products easier
- declaration of total percentage of juice in juice drinks. This enables consumers to know exactly how much juice is in a product.

In the Malaysian case, we have the Halal certification and Malaysian consumers especially Muslim consumers look for the Halal labelling while they are purchasing their routine provisions.

Nutrition Labelling—Applicable Foods

Nutrition labeling is required for most foods. However, not many local food manufacturers put nutrition labeling in Malaysia. And there is practically no nutrition information available for any raw foods even in the large supermarkets. We reckon that there is presently no law in Malaysia that specifically govern food labeling and it will be a far sighted move if Malaysian consumers push for voluntary nutrition labeling on raw food. Consumer associations could start with the supermarkets for simple reason they have the resources and the capacity to do it.

Nutrition Information Panel

Under a label's "Nutrition Facts" panel, manufacturers should provide information on certain nutrients. The most important (underlined) and voluntary components and the order in which they must appear are:

- total calories
- calories from fat
- calories from saturated fat
- total fat
- saturated fat
- polyunsaturated fat
- monounsaturated fat
- cholesterol
- sodium
- potassium
- total carbohydrate
- dietary fibre
- soluble fibre
- insoluble fibre
- sugars
- sugar alcohol (for example, the sugar substitutes xylitol, mannitol and sorbitol)
- other carbohydrate (the difference between total carbohydrate and the sum of dietary fibre, sugars, and sugar alcohol if declared)

- protein
- vitamin A
- percent of vitamin A present as beta-carotene
- vitamin C
- calcium
- iron
- other essential vitamins and minerals

If a claim is made about any of the optional components, or if a food is fortified or enriched with any of them, nutrition information for these components also becomes important.

Nutrition Panel Format

All nutrients must be declared as percentages of the Daily Values which are label reference values. The amount, in grams or milligrams, of macronutrients (such as fat, cholesterol, sodium, carbohydrates, and protein) are still listed to the immediate right of these nutrients. But, for the first time, a column headed "% Daily Value" appears on the far right side.

Declaring nutrients as a percentage of the Daily Values is intended to prevent misinterpretations that arise with quantitative values. For example, a food with 140 milligrams (mg) of sodium could be mistaken for a high-sodium food because 140 is a relatively large number. In actuality, however, that amount represents less than 6 percent of the Daily Value for sodium, which is 2,400 mg.

On the other hand, a food with 5 g of saturated fat could be construed as being low in that nutrient. In fact, that food would provide one-fourth the total Daily Value because 20 g is the Daily Value for saturated fat.

In some circumstances, variations in the format of the nutrition panel are needed. Some are mandatory. For example, the labels of foods for children under 2 (except infant formula, which has special labeling rules) may not carry information about saturated fat, polyunsaturated fat, monounsaturated fat, cholesterol, calories from fat, or calories from saturated fat.

The reason is to prevent parents from wrongly assuming that infants and toddlers should restrict their fat intake, when, in fact, they should not. Fat is important during these years to ensure adequate growth and development.

The labels of foods for children under 4 may not include the % Daily Values for total fat, saturated fat, cholesterol, sodium, potassium, total carbohydrate, and dietary fiber. They may carry % Daily Values for protein, vitamins and minerals, however. These nutrients are the only ones for which FDA has set Daily Values for this age group.

Serving Sizes

The serving size remains the basis for reporting each food's nutrient content. The serving size must be uniform and should reflect the amount people actually consume. They also must be expressed in both common household and metric measures.

Common household measures: the cup, tablespoon, teaspoon, piece, slice, and common household containers used to package food products (such as a jar or tray). Ounces may be used, but only if a common household unit is not applicable and an appropriate visual unit is given—for example, 1 oz (28g/about 1/2 pickle).

Grams (g) and milliliters (mL) are the metric units that are used in serving size statements.

Serving size is the amount of food customarily eaten at one time. The serving sizes that appear on food labels should be of "Reference Amounts Customarily Consumed Per Eating Occasion."

The serving size of products that come in discrete units, such as cookies, chocolate bars, and sliced products, is the number of whole units that most closely approximates the reference amount. Cookies are an example. Under the "bakery products" category, cookies have a reference amount of 30 g. The household measure closest to that amount is the number of cookies that comes closest to weighing 30 g. Thus, the serving size on the label of a package of cookies in which each cookie weighs 13 g would read "2 cookies (26 g)."

If one unit weighs more than 50 percent but less than 200 percent of the reference amount, the serving size is one unit. For example, the reference amount for bread is 50 g; therefore, the label of a loaf of bread in which each slice weighs more than 25 g would state a serving size of one slice.

Nutrient Content Claims

Any labeling regulations must spell out what terms may be used to describe the level of a nutrient in a food and how they can be used. These are the core terms:

- **Free.** This term means that a product contains no amount of, or only trivial or "physiologically inconsequential" amounts of, one or more of these components: fat, saturated fat, cholesterol, sodium, sugars, and calories. For example, "calorie-free" means fewer than 5 calories per serving, and "sugar-free" and "fat-free" both mean less than 0.5 g per serving. Synonyms for "free" include "without," "no" and "zero." A synonym for fat-free milk is "skim".
- **Low.** This term can be used on foods that can be eaten frequently without exceeding dietary guidelines for one or more of these components: fat, saturated fat, cholesterol, sodium, and calories. Thus, descriptors are defined as follows:
    - o **low-fat**: 3 g or less per serving
    - o **low-saturated fat**: 1 g or less per serving
    - o **low-sodium**: 140 mg or less per serving
    - o **very low sodium**: 35 mg or less per serving
    - o **low-cholesterol**: 20 mg or less and 2 g or less of saturated fat per serving
    - o **low-calorie**: 40 calories or less per serving.

Synonyms for low include "little," "few," "low source of," and "contains a small amount of."

- **Lean and extra lean.** These terms can be used to describe the fat content of meat, poultry, seafood, and game meats.
    - o **lean**: less than 10 g fat, 4.5 g or less saturated fat, and less than 95 mg cholesterol per serving and per 100 g.
    - o **extra lean**: less than 5 g fat, less than 2 g saturated fat, and less than 95 mg cholesterol per serving and per 100 g.
- **High**. This term can be used if the food contains 20 percent or more of the Daily Value for a particular nutrient in a serving.
- **Good source**. This term means that one serving of a food contains 10 to 19 percent of the Daily Value for a particular nutrient.
- **Reduced**. This term means that a nutritionally altered product contains at least 25 percent less of a nutrient or of calories than the regular, or reference, product. However, a reduced claim can't be made on a product if its reference

food already meets the requirement for a "low" claim.

- **Less**. This term means that a food, whether altered or not, contains 25 percent less of a nutrient or of calories than the reference food. For example, pretzels that have 25 percent less fat than potato chips could carry a "less" claim. "Fewer" is an acceptable synonym.
- **Light**. This descriptor can mean two things:
  - o First, that a nutritionally altered product contains one-third fewer calories or half the fat of the reference food. If the food derives 50 percent or more of its calories from fat, the reduction must be 50 percent of the fat.
  - o Second, that the sodium content of a low-calorie, low-fat food has been reduced by 50 percent. In addition, "light in sodium" may be used on food in which the sodium content has been reduced by at least 50 percent.

  The term "light" still can be used to describe such properties as texture and color, as long as the label explains the intent—for example, "light brown sugar" and "light and fluffy."

- **More**. This term means that a serving of food, whether altered or not, contains a nutrient that is at least 10 percent of the Daily Value more than the reference food. The 10 percent of Daily Value also applies to "fortified," "enriched" and "added" "extra and plus" claims, but in those cases, the food must be altered.

Alternative spelling of these descriptive terms and their synonyms is allowed—for example, "hi" and "lo"—as long as the alternatives are not misleading.

Healthy. A "healthy" food must be low in fat and saturated fat and contain limited amounts of cholesterol and sodium. In addition, if it' s a single-item food, it must provide at least 10 percent of one or more of vitamins A or C, iron, calcium, protein, or fiber. Exempt from this "10-percent" rule are certain raw, canned and frozen fruits and vegetables and certain cereal-grain products. These foods can be labeled "healthy," if they do not contain ingredients that change the nutritional profile, and, in the case of enriched grain products, conform to standards of identity, which call for certain required ingredients. If it's a meal-type product, such as frozen entrees and multi-course frozen dinners, it must provide 10 percent of two or three of these vitamins or minerals or of protein or fiber, in addition to meeting the other criteria. The sodium content cannot exceed 360 mg per serving for individual foods and 480 mg per serving for meal-type products.

Other Definitions

Among them:

- **Percent fat free**: A product bearing this claim must be a low-fat or a fat-free product. In addition, the claim must accurately reflect the amount of fat present in 100 g of the food. Thus, if a food contains 2.5 g fat per 50 g, the claim must be "95 percent fat free."
- **Implied**: These types of claims are prohibited when they wrongfully imply that a food contains or does not contain a meaningful level of a nutrient. For example, a product claiming to be made with an ingredient known to be a source of fibre (such as "made with oat bran") is not allowed unless the product contains enough of that ingredient (for example, oat bran) to meet the definition for "good source" of fibre. As another example, a claim that a product contains "no tropical oils" is allowed—but only on foods that are "low" in saturated fat because consumers have come to equate tropical oils with high saturated fat.
- **Meals and main dishes**: Claims that a meal or main dish is "free" of a nutrient, such as sodium or cholesterol, must meet the same requirements as those for individual foods. Other claims can be used under special circumstances. For example, "low-calorie" means the meal or main dish contains 120 calories or less per 100 g. "Low-sodium" means the food has 140 mg or less per 100 g. "Low-cholesterol" means the food contains 20 mg cholesterol or less per 100 g and no more than 2 g saturated fat. "Light" means the meal or main dish is low-fat or low-calorie.

'Fresh'

What is fresh is very subjective. There must be a guideline for the usage of this word. "Fresh" must only be used to suggest that a food is raw or unprocessed. In this context, "fresh" can be used only on a food that is raw, has never been frozen or heated, and contains no preservatives. "Fresh frozen," "frozen fresh," and "freshly frozen" can be used for foods that are quickly frozen while still fresh.
Other uses of the term "fresh," such as in "fresh milk" or "freshly baked bread," are not affected.

Health Claims

Claims for a nutrient or a food and the risk of a disease or health-related condition are some of the health claims made by the manufacturers. It can be made in several manner: through third-party references (such as the National Cancer Institute), statements, symbols (such as a heart), and descriptions. Whatever the case, the claim must meet the requirements for authorized health claims—for

example, they cannot state the degree of risk reduction and can only use "may" or "might" in discussing the nutrient or food-disease relationship. And they must state that other factors play a role in reducing the rise of that disease.

The claims also must be phrased so that consumers can understand the relationship between the nutrient and the disease and the nutrient's importance in relationship to a daily diet.

An example of an appropriate claim is: "While many factors affect heart disease, diets low in saturated fat and cholesterol may reduce the risk of this disease.

Ingredient Labelling

Ingredient declaration is required on all foods that have more than one ingredient.

Because people may be allergic to certain additives and to help them better avoid them, the ingredient list must include, when appropriate:

- Ministry of Health certified colour additives
- sources of protein hydrolysates, which are used in many foods as flavours and flavour enhancers
- declaration of caseinate as a milk derivative in the ingredient list of foods that claim to be non-dairy, such as coffee whiteners.

Mr Sivananthan presenting his paper

Codex Alimentarius Commission (Codex)

Mariam binti Abdul Latif
Codex Contact Point
Ministry of Health Malaysia
11 October 2001

Introducing Codex Alimentarius Commission
Codex Activities in Malaysia

What is Codex Alimentarius Commission?

- The only international intergovernmental body responsible for determining food standards
- International reference in trade dispute settlement

Codex Alimentarius

- Latin for "Food Law" or "Food Code"
- A collection of internationally adopted food standards presented in a uniform manner

What is "Codex"

- The Codex Alimentarius Commission
  - > Committees and Task Forces
  - > Secretariat
- The Codex Alimentarius
  - > Standards and residue limits
  - > Code of practices, guidelines and recommendations (13 volumes)
- The Codex "Process"

Codex Alimentarius Commission

- Founded by FAO in 1961
- Responsible for the joint FAO/WHO Food Standards Programme since 1962

Codex Objectives

- To protect the health of consumers
- To ensure fair practices in the food trade

Codex Alimentarius Commission

- 165 Member countries
  > Observers from IGOs & INGOs
- Establishes its own programme of work
- Adopts standards, guidelines and other recommendations
- Makes recommendations to Member governments, FAO and WHO on general food standards matters

Pn. Mariam delivering her paper

The Commission

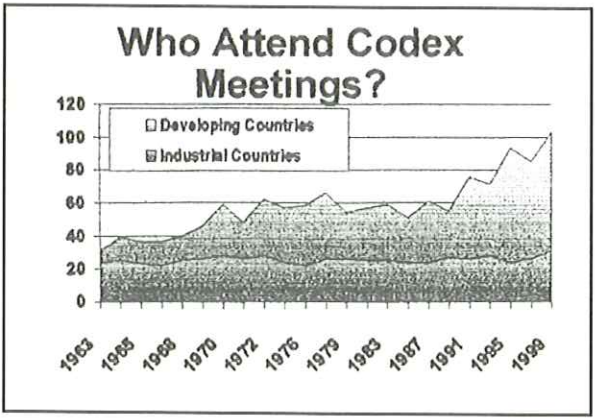
- Meets every 2 years - Rome or Geneva
- Meetings last for 6 days
- Works in Arabic*, Chinese*, English, French and Spanish *(* from 2001)*

Codex Alimentarius Commission

- 1st Session of the Codex Alimentarius Commission, Rome, October 1963

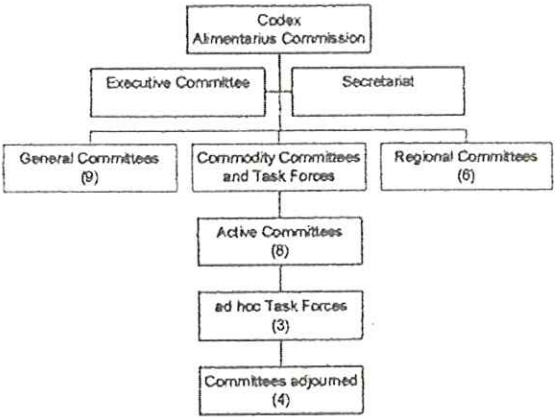
  > *120 participants from 30 countries and 16 international organizations*

- 23rd Session of the Codex Alimentarius Commission, Rome, July 1999



> *608 participants from 104 countries and 63 international organizations*

Structure of the Codex Alimentarius Commission



Management Organs of the Commission

- The Executive Committee
- The Regional Coordinating Committees
- The Secretariat of the Commission

The Executive Committee

- Chairperson
- 3 Vice Chairpersons
- 7 Regional Representatives (governments)
- 6 Regional Coordinators (observers)

The Regional Coordinating Committees

- 6 Regional Committees- Asia, Africa, Europe, Near East, Latin America & Caribbean, North America & Southwest Pacific
- Coordinate activities relevant to the region
  - Regional Codex standards
  - Harmonization

The Secretariat of the Commission

- Administrative support to the Commission
- Link with Codex Contact Points
- Co-ordination with the work of other organs
- Located at HQ of FAO (Rome)

The Secretariat

Acts as the link with Codex Contact Points of Member countries

Technical Organs of the Commission

9 General Subject Committees
+
12 Commodity Committees
+
3 Ad Hoc Inter-Governmental Task Forces

General Subjet Committees

- General Principles (France)
- Food Additives and Contaminants (Netherlands)
- Food Labelling (Canada)
- Food Hygiene (USA)
- Pesticide Residues (Netherlands)
- Methods of Analysis and Sampling (Hungary)
- Food Import and Export Inspection and Certification Systems (Australia)
- Residues of Veterinary Drugs in Foods (USA)
- Nutrition and Foods for Special Dietary Uses (Germany)

Codex Commodity Committees

- Processed Fruits and Vegetables (USA)
- Fresh Fruits and Vegetables (Mexico)
- Milk and Milk Products (New Zealand)
- Fats and Oils (UK)
- Fish and Fishery Products (Norway)

- Natural Mineral Waters (Switzerland)
- Cocoa Products and Chocolate (Switzerland)
- Sugars (UK)

Ad Hoc Intergovernmental Codex Task Forces

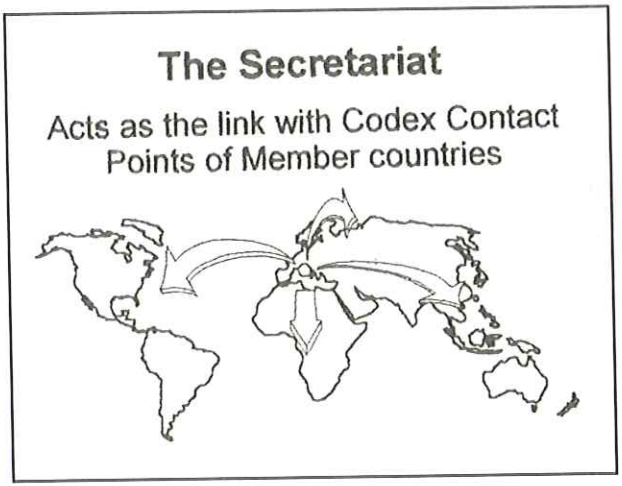
(established by the 23rd Session of the CAC)

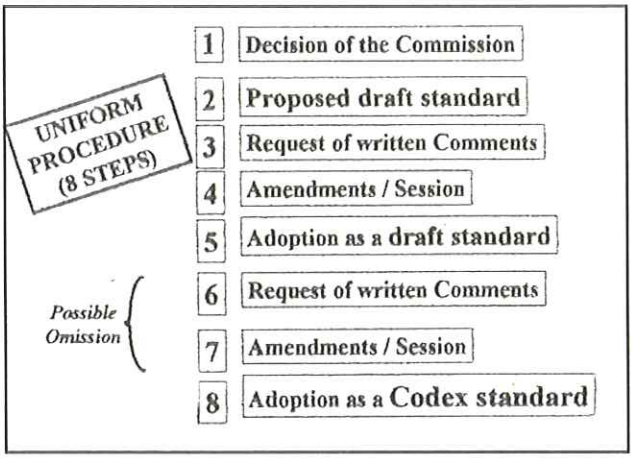
- Foods derived from Biotechnology (Japan, 14-17 March 2000)
- Animal Feeding (Denmark, 13-15 June 2000)
- Fruit and Vegetable Juices (Brazil, 18-22 September 2000)

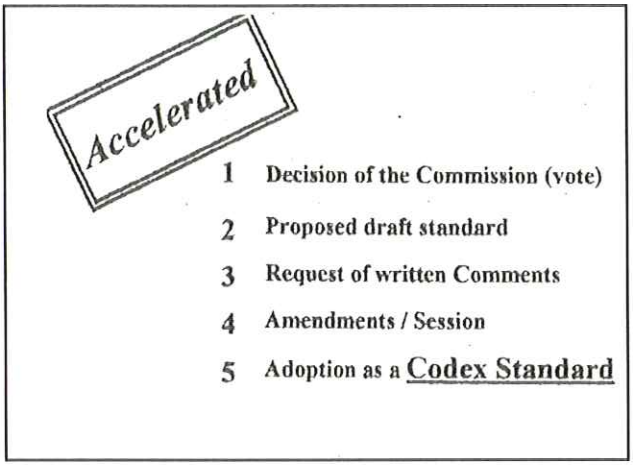
Expert Input to Codex Committees

- Joint FAO/WHO Expert Committee on Food Additives (JECFA)
- Joint FAO/WHO Meeting on Pesticide Residues (JMPR)
- Joint FAO/WHO Expert Consultations

Elaboration Procedures







Achievements and General Decisions

Achievements

- 237 Food Standards
- 43 Codes of Practice
- 33 Guidelines

- 197 Pesticides evaluated
- 3274 Limits for pesticides residues
- 25 Guidelines for contaminants
- 54 Veterinary drugs evaluated
- 289 Limits of veterinary drug residues
- 1300 Food additives evaluated

General Decisions

Four statements of principle on the role of science in Codex decision-making

Four Statements of Principles

1. The food standards, guidelines and other recommendations of Codex Alimentarius shall be based on the principle of sound scientific analysis and evidence, involving a thorough review of all relevant information, in order that the standards assure the quality and safety of the food supply.
2. When elaborating and deciding upon food standards Codex Alimentarius will have regard, where appropriate, to other legitimate factors relevant for the health protection of consumers and for the promotion of fair practices in food trade.
3. In this regard it is noted that food labelling plays an important role in furthering both of these objectives.
4. When the situation arises that Members of Codex agree on the necessary level of protection of public health but hold differing views about other considerations, members may abstain from acceptance of the relevant standard without necessarily preventing the decision by Codex.

Codex and the SPS Agreement

SPS Agreement

- Discourages the use of SPS measures as barriers to international trade
- Recognizes Codex as a reference on food safety
- Codex may be used to settle disputes
- Calls for harmonization based on Codex

SPS Implications for Codex/WTO members

- Should base their requirements on Codex
- Should become more involved in Codex work
- Should harmonize requirements using Codex

National regulations which are consistent with Codex meet the requirements of SPS

Codex Activities in Malaysia

Malaysia

- Member of Codex since 1971
- Codex Contact Point

  1971 - SIM

  1975 - SIRIM

  1996 - Food Quality Control Division, Ministry of Health

Codex Contact Point Malaysia

Food Quality Control Division
Ministry of Health Malaysia
3rd Floor, Block E
Jalan Dungun, Bukit Damansara
50490 Kuala Lumpur
E-mail: ccp-malaysia@dph.gov.my
Tel: 03-2540088
Fax: 03-2537804

National Codex Committee

- Established in 1985
- To formulate a national standard in all matters related to Codex
- Meets twice a year

- Chair: Deputy Director General (Public Health), Ministry of Health
- Secretariat: Food Quality Control Division, Ministry of Health

National Codex Committee Members

- FQCD, MOH
- Ministry of Agriculture
- MITI
- Department of Fisheries
- Chemistry Department
- Malaysia Cocoa Board
- FOMCA
- MINT
- FMM
- NSM
- IMR, MOH
- Ministry of Primary Industries
- MATRADE
- MARDI
- MPOB
- SIRIM Berhad
- JAKIM
- UPM
- MIFT
- SMIDEC
- Ministry of Domestic Trade and Internal Affairs
- Department of Veterinary Services
- Pesticides Board, Department of Agriculture
- Biotechnology Cooperative Centre, UPM

Organization Structure

National Codex Committee

- 3 Main Sub-Committees
  CAC
  Codex Executive Committee
  Codex Coordinating Committee for Asia (CCAsia)

- 16 Sub-Committees
  General Subjects
  Commodities

- 3 Codex Task Forces

- Ad Hoc Working Groups

Active Role by Malaysia

- Hosted the CCAsia meeting in Kuala Lumpur, January 1992
- Codex representative for Asia since 1991 until 1999 (2 terms)
- Appointed as the Regional Coordinator for Asia at the recent 24th Session of the CAC, Geneva, 2-5 July 2001
- Will host the 13th Session of CCAsia in September 2002
- Observer at the Codex Executive Committee
- Coordinate issues of interest to Asian countries

Malaysia's contribution

- Codex Standard for Palm Olein and Palm Stearin
- Codex Standard for Carambola
- Codex General Guideline for Use of the Term "Halal"
- Recommended International Code of Hygienic Practice for Storage and Transport of Edible Oils and Fats in Bulk
- Draft Code of Practice for Street Vended Foods
- Code of Hygienic Practice for Spices

Food Safety is a Shared Responsibility

Role of the Government

- Food Legislation and Enforcement
- Advice for Industry/Trade
- Information Gathering and Research
- Provision of Health Related Services

Role of the Private Sector

- Good Practices by Primary Producers and Distributors
- Quality Assurance and Control of Processed Food
- Appropriate Processes and Technology
- Trained Managers and Food Handlers
- Informative Labelling and Consumer Education

Role of the Consumer

- Educated and Knowledgeable
- Discriminating and Selective
- Safe Food Practices in the Home
- Community Participation
- Active Consumer Groups

Conference on International Food Trade Beyond 2000, 11-15 October 1999, Melbourne

General Recommendations of the Conference:

- Called upon Member Governments to strengthen their contributions and participation in Codex work.
- Called on countries to adhere to the FAO/WHO Code of Ethics for International Trade in Food in order to ensure that food products exported to developing countries meet national and international requirements.
- Governments should clearly acknowledge the role of consumers, producers and their representative bodies in the development of national and international food standards.
- Governments of member countries should take all necessary steps to apply Codex standards to all imported, exported and domestically produced and traded foods.

Questions from the floor

Codex Issues Of Interest To Consumers: Food Hygiene

By Shamsinar Abdul Talib & Dr Azriman Rosman,
Principal Assistant Directors,
Food Quality Control Division, Ministry of Health

It would best be if some of the definitions under Codex in relation to food hygiene are understood.

Food hygiene results when all conditions and measures necessary are taken or implemented to ensure the safety and suitability of food at all stages of the food chain.

Food safety is the assurance that food will not cause any harm to the consumer when it is prepared and/or eaten according to the intended use.

Food suitability is the assurance that the food concerned is acceptable for human consumption according to its intended use.

The main issues in the area of food hygiene that are of concern to consumers are poor hygienic practices among food handlers and the chasing of profits by food manufacturers or producers.

Other issues of concern in this area are poor knowledge on the importance of food hygiene, not just on the part of food handlers but also on the part of consumers, and the problem of consumers not applying their right to choose.

Codex Committee on Food Hygiene

This Committee is hosted by the government of the United States of America. It has been tasked with the important duty of ensuring that all the necessary regulations for food hygiene are drawn up and put into place, globally.

The Committee's terms of reference are to:

- Draft the basic provisions on food hygiene that will be applicable to all food
- Consider, amend and endorse provisions on hygiene prepared by Codex commodity committees as contained in the Codex commodity standards
- Consider, amend and endorse provisions on hygiene prepared by Codex commodity committees as contained in the Codex codes of practice

- Draft provisions on hygiene that will be applicable to specific food items or food groups
- Consider specific hygiene problems assigned to it by the Codex Commission.

General Requirements for Food Hygiene

Codex has issued a basic reference document for general requirements to exist if there is to be food hygiene. This document contains the Recommended International Code of Practice and General Principles of Food Hygiene.

It also contains a Hazard Analysis and Critical Control Point (HACCP) System, under which the guidelines for its application are provided.

The voluminous document also outlines the Principles for the Establishment and Application for Microbiological Criteria for Foods, Guidelines for the Design of Control Measures for Street-vended Foods in Africa, advisory texts and a checklist of requirements for national food control programmes.

The essential principles of food hygiene applicable throughout the food chain in order to achieve the goal of ensuring that food is safe for human consumption are identified in the Recommended International Code of Practice for the General Principles of Food Hygiene.

This document indicates how to implement these principles, provides guidance for specific codes in sectors of the food chain, processes or commodities and recommends a HACCP-based approach for food hygiene.

The general principles are defined and the steps to the taken for food hygiene, from primary production to design and facilities for food storage and transport, maintenance and sanitation, personal hygiene, product information and consumer awareness are outlined.

The HACCP System and the Guidelines for its application are given as an annex. Under this section, the principles of the HACCP system adopted by the Commission are set out, and the basis of the requirement for the application of the system is explained. This is followed by the guidelines on how the system is to be applied. The details of the application may vary, according to the circumstances of the food chain.

The Principles for the Establishment and Application of Microbiological Criteria for Foods provides the guidance for the establishment and application of microbiological

criteria for foods at any point in the food chain.

The microbiological criteria will define the acceptability of a food product or food lot, based on the absence or presence, or the number of microorganisms, including parasites, and/or the quantity of their toxins or metabolites.

Microbiological criterion itself is explained in this section, and the purposes for the application of microbiological criteria for foods are outlined.

Sampling plans, methods and handling of food for establishing and applying microbiological criteria are also defined, and the procedures for reporting on contaminated food are outlined.

So, in general, it can be said that the Recommended International Code of Practice and General Principles of Food Hygiene provide guidance to food producers, handlers and manufacturers that aim to ensure the production of safe food.

Observed diligently by governments, these recommendations will serve to promote trade by increasing confidence in food safety, and help consumers make the right choice in their food preferences.

(This report is summarised from the slide presentation by the presenters).

Codex Labelling Issues of Interest to Consumers

By Nik Shabnam bt Nik Mohd Salleh
Food Quality Control Division
Ministry of Health

The Codex Alimentarius Commission which implements the food safety standards drawn up jointly by the Food and Agriculture Organisation (FAO) and the World Health Organisation (WHO) has the two-pronged objective of protecting the health of consumers and ensuring fair practices in the food trade.

Codex Alimentarius, the Food Law or Code, are internationally adopted food standards presented in a uniform manner and serve as a useful guide for the national food control and enforcement authorities.

Over and above the food safety recommendations, the Codex also specifies standards for the labeling of foods. Labelling is important because labels are the primary means of communication between the producer and the seller, and between the seller and the buyer or consumer.

The regulations on labelling specified under Codex are:

- Codex General Standard for the Labelling of Prepackaged Foods
- Codex General Standard for the Labelling of Food Additives When Sold As Such
- General Standard for the Labelling of and Claims for Prepackaged Foods for Special Dietary Uses
- Codex General Guidelines on Claims
- Codex Guidelines on Nutrition Labelling
- Guidelines for the Use of Nutrition Claims
- Guidelines for the Use of the Term 'Halal'

The Codex General Standard for the Labelling of Prepackaged Foods applies to the labelling of all prepackaged foods to be offered to the consumer. Generally, prepackaged foods shall not be described in a false, misleading or deceptive manner.

It is mandatory that producers of prepackaged foods provide details such as the name of the food, or the true nature of the food, the list of ingredients in the descending order of weight, the net contents and drained weight in metric, the names and

addresses of the manufacturer, packer and importer, country of origin, lot identification, date marking and storage instructions.

These mandatory requirements also apply to food additives sold by retail, while the general principle for the Codex General Standard for the Labelling of Food Additives When Sold As Such is that such labelling shall not be done in a deceptive manner.

Additional mandatory labelling requirements have also been put into force. These are on the quantitative labelling of ingredients in the food and irradiated food. Spices, herbs and small units where the largest surface area is less than 10cm-square are exempted.

The General Standard for the Labelling of and Claims for Prepackaged Foods for Special Dietary Uses apply to foods specially processed to satisfy special dietary requirements which exist because of a particular condition or disease.

Such claims shall not be presented in a deceptive manner and claims making comparatives or using superlatives or not allowed.

The Codex General Guidelines on Claims are applicable to all foods, whether covered by the Codex Standards or not and under this, no food shall be described in a manner that is false and misleading. It is incumbent upon the person marketing the food to be able to justify the claims.

Claims are defined as representations that state, suggest or imply that a food has particular characteristics as to its origin, nutritional properties, nature, production, processing, composition or any other quality.

Claims that a given food provides an adequate source of all the essential nutrients, except well defined products, are prohibited. Also prohibited are claims implying that a balanced diet cannot supply an adequate amount of all the required nutrients and claims that cannot be substantiated.

Claims on the religious or ritual preparation of particular foods, done in order to conform to religious requirements are allowed, as are claims that highlight the absence or non-addition of particular substances, provided that these are not misleading.

The Codex Guidelines on Nutrition Labelling are designed to provide the consumer with information on how to make a wise choice of food and to convey information on the nutrient content of the food.

They are also geared at encouraging the use of sound nutrition in the formulation of foods and ensuring that the nutrition information provided on labels is not misleading.

Nutrient labelling is the declaration of the nutrient content of a food on the label. It is mandatory for foods for which nutrition claims are made and voluntary for others. When nutrient declaration is made, it is mandatory that the energy value, the amount of carbohydrate, protein and fat and the amount of any other nutrient it is claimed to contain is stated. Vitamins and minerals in such foods should be in a significant amount

In the case of the use of the term "halal", the general guidelines recommend the measures to be taken on the use of "halal" claims in food labelling. Halal food means food permitted under Islamic law and such food should therefore fulfill the specified conditions.

Food additives derived from food of animal origin such as dogs, pigs and snakes, intoxicating and hazardous plant origin, alcoholic and intoxicating drinks are also banned in halal food.

The slaughtering of animals for use in halal food and the preparation, processing. Packaging, transportation and storage of such food must also be in compliance with the rules laid down if the term "halal" is to appear on the label.

(This report is based on a slide presentation made by the presenter).

(Left to right) :
Pn. Shamsinar, Pn Nik Shabnam, Mr. Siva, Dr. Tee and Mr. Teo

Codex Alimentarius: Current Nutrition Issues

E-Siong Tee, PhD
Institute for Medical Research, Kuala Lumpur

Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU)

- Established 1966
- Host government: Federal Republic of Germany
- Next meeting in November 2001

Terms of reference

- To study specific nutritional problems assigned to it by the Commission & advise the Commission on general nutrition issues
- To draft general provisions, as appropriate, concerning the nutritional aspects of all foods
- To develop standards, guidelines or related texts for foods for special dietary uses, in cooperation with other committees

Nutrition labelling and claims

- Food Labelling - Complete Texts (1998)
- Include nutritional aspects
  - nutrition labelling
  - nutrition claims

Some of the participants

Codex Guidelines on Nutrition Labelling [CAC/GL 2-1985 (Rev 1-1993)]

- definition
- application of nutrient declaration
- listing of nutrients
- calculation of nutrients
- presentation of nutrient content
- periodic review of nutrition labelling

Codex Guidelines for Use of Nutrition Claims (CAC/GL 23-1997)

- definition
- nutrient content claims
- comparative claims
- nutrient function claims
- translated into proposed new law on nutrition labelling and claims in Malaysia
- soon to be gazetted?

Guidelines for vitamin and mineral supplements

- discussed at length in 2000 session, to continue in 2001 session
- controversial: some countries do not want the guidelines developed
- preamble: people should obtain all nutrients from balanced diet; only in specific cases are supplements required
- definition: concentrated sources of vitamins and minerals, in capsules, tablets, powders, etc
- composition: a single nutrient or combination; suitability of nutrient should be proved by scientific data
- minimum level and maximum upper limit
- labelling requirements: warning statement of possible toxic effect
- statement that supplements cannot be used to replace meals on a long term; should be taken on advice of nutritionist, dietitian, medical doctor

Revised standard for infant formula

- Revision of an existing standard: CODEX STAN 72-1981
- At step 3 of the procedure
- Scope: infant formula in liquid or powdered form
- Essential composition: min and max levels of vitamins and minerals, protein, fat and fatty acid, carbohydrates and energy
- Labelling requirements: statement on breastfeeding, no picture of infants, etc

Revised standard for processed cereal-based foods for infants and young children

- Revision of an existing standard, at step 3
- Scope: processed cereal-based foods as a complement to breast milk or infant formula from age of 4-6 months onwards
- Based on one or more milled cereals and/or legumes and/or starchy root
- Essential composition: min amounts of protein, energy density, minerals and vitamins

List of mineral salts and vitamins for use in foods for infants and children

- Started revision in 2000, to continue 2001
- To develop criteria for inclusion or deletion of these nutrients

Scientific criteria for health claims

- Related to current work in CCFL on developing guidelines for health claims
- CCNFSDU to discuss on criteria for claims
- Discussion paper tabled in 2000, but not discussed in detail; to discuss in 2001

Codex Issues of Interest to Consumers: Biotechnology

By Shamsinar Abdul Talib
Principal Assistant Director
Food Quality Control Division
Ministry of Health

Biotechnology generally refers to the scientific techniques that use living cells and organisms in the production of new foods or new varieties of foods, medicines or chemicals.

This technique has been used in the past, such as in the production of bread, cheese and in the local "tapai".

Modern biotechnology however requires the application of in vitro nucleic acid techniques, including recombinant DNA techniques, and includes the fusion of cells from outside the target species.

These techniques have given rise to gene technology, genetic engineering and genetic modification and bringing about heated discussion and raging controversies not just on the methods used but on ethics as well.

Modern biotechnology involves the transfer of genetic materials from one specie to the same specie or to another specie for the purposes of modifying the characteristics of that specie.

In this method, an existing gene can be removed or reversed, by adding a gene that has been selected and moved from another related strain or from a different specie.

Genetically modified foods are foods that have been derived from organisms that have been genetically modified and these include plants, animals and microorganisms. The new genes are inserted into an individual organism cell, grown in tissue culture and regenerated into a full size organism.

Traditional methods to modify food plants are claimed to have limitations, which is why modern biotechnology developed at a rapid pace at the turn of the last century. In traditional methods, cross-breeding can only occur in the same or nearly related species. Also, traditional breeding takes a long time.

Modern biotechnology has become widespread in use because in these new

techniques, the time taken to develop new foods can be reduced by several years and this technology allows the transfer of genes in a controlled manner.

It can help to increase crop production, lower farming costs, improve food quality and safety and enhance the sustainability of the environment, and can be a powerful tool for the sustainable development of agriculture and food production.

The questions asked about genetically modified food (GMF) are that whether it can really ensure global food security and whether GMF is the answer to global food supply. Fears have also been raised about the ethics and religious aspects of tinkering with genes.

There have also been questions about the impacts of GMF on the environment and on global trade, and about the safety of GM foods and the health risks involved, such as allergenicity, antibiotic resistance and toxicity.

Many countries around the world have put in place regulations or guidelines to control GMF. Internationally, this has been done by Codex and the United Nations Environment Programme, regionally by ASEAN and the European Union and nationally in Malaysia by the Ministry of Science, Technology and Environment and the Ministry of Health.

Amendments have been made to the Codex General Standard for the Labelling of Prepackaged Foods to include GM foods and a proposed Draft Recommendations for Labelling of Food and Food Ingredients Obtained Through Certain Techniques of Genetic Engineering/Genetic Modification – Definitions has been drawn up.

The definitions cover food and food ingredients obtained through certain techniques of genetic modification/genetic engineering, GM/GE organisms and modern biotechnology.

The proposed draft guidelines for food and food ingredients obtained through GM/GE are set to become one of the guidelines for the labelling of food under Codex. The aim is to ensure that the labelling of GM/GE food is factual, verifiable, understandable and not misleading.

Also in the area of Codex food labelling regulations, an Ad hoc Intergovernmental Codex Task Force on Foods Derived from Biotechnology has been established.

The duty of this task force is to develop standards, guidelines or recommendations for foods derived from biotechnology or traits introduced into foods by biotechnology on the basis of scientific evidence, risk analysis and other legitimate factors relevant

to the health of consumers and the protection of fair trade practices.

Guidelines have been proposed under Codex for the safety assessment of plant foods derived from recombinant DNA technology, for the safety assessment of foods derived from microorganisms and for the compilation of methods of analysis of foods derived from modern biotechnology.

In Malaysia, draft provisions have been drawn up on GM foods, based on the Codex standard, for inclusion into the Malaysian Food Regulations of 1985. Under these provisions, the permission of the Director-General of Health must be sought before GM foods are imported, prepared, advertised for sale or sold. A table of approved GM foods and labelling provisions are also proposed in the draft.

What has now to be done in Malaysia is the training of analysts to detect GM foods or GM ingredients in foods and the training of enforcement personnel. The infrastructure has also to be built up, with funds, laboratories, research and development and collaboration with the relevant international agencies and experts.

Biotechnology is here to stay, therefore consumers should be given the choice to choose, that is, given all the information necessary for them to make an informed choice about the food they buy and consume.

The government, on its part, must ensure that any GM food or ingredients sold in the country are safe for consumption and build laboratories equipped to detect the presence of GM foods.

(This report is produced from the slide presentation made by the author of this paper).

Some of the participants

Role of Manufacturers in Food Standards

By Teo Beng Leong
Federation of Malaysian Manufacturers

Basically, all of us are consumers. We who spend our hard earned money on everything, the regulator, who enforces all the rules necessary for civilized living, and the manufacturer, to whom most of the money we spend goes, are all consumers of goods and services.

Consumers expect value for their money – safe food, of a good quality and at a reasonable price. This is one of the basic rights of a consumer. The regulator, who is the enforcement authority for this, enforces the rules of the trade and industry, which will give confidence to the consumer that the manufacturer is complying with the demands of safe, good quality food.

Good quality is the ability of that product to meet or satisfy the needs or requirements of the consumer. He expects the food on the shelf that he buys to be safe to consume, that he is satisfied with the product features and characteristics stated on the label.

Fortunately, or unfortunately, these basic requirements have been specified for the consumer in local laws and food standard.

Consumer groups may now want to have more say in the establishing of the food standard, or allow more flexibility for product ranges to meet specified needs.

Structure of a food standard

Basically, the food standard requires that there be certain compulsory features present before food can be considered safe to eat. These are the:

- Safety factor: that there must be no pathogenic organism present; that that there is a critical processing step; and that containment levels are established.
- Product features:
  - Chemical
  - Physical
  - Microbiological
  - Organoleptic or Sensory
- Content: Ingredients, additives, nutrient supplements

- Packaging and Labelling
- Manufacturing standard and quality assurance

The Question for the consumer remains the same: How do we ensure that we are being supplied with food that is safe to eat, that is "safe" by the standards that we consider are appropriate?

At the same time, how is the consumer to know for sure that strict health and safety regulations are not being imposed, in order to protect domestic producers, and in the process force consumers to pay more for these products?

The giant step forward

The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) Agreement came into force with the establishment of the World Trade Organisation on Jan 1, 1995. This Agreement states that food safety measures which are necessary to protect public health should conform to Codex Standards.

The SPS Agreement calls on all countries to harmonise their national standards, based on Codex. It is, to put it simply, all about ensuring fair practices in food trade, through harmonizing national food safety standards based on Codex standards – which are aimed at protecting the health of consumers and ensuring a level "playing field".

In order to protect the health of consumers, the Codex Standards establish food safety requirements which are *adequate* to ensure consumer *protection,* and establish *adequate* health protection measures for consumers based on *sound science.*

Codex prescribes that certain features must be present in order that the health of consumers is protected as trade in food goes on among the countries of the world. These are:

- Safety assessment protocols such as HACCP
- Good hygienic or manufacturing practices
- Compositional and performance standards
- Contaminant limits
- Additive level
- Labelling requirements

- QA or certification procedures

In order to ensure fair practices in this food trade among countries, Codex Standards eliminate technical barriers between countries and thus establish fair competition, and an environment in which there is less trade distortion. The results are cheaper products, more quality products to choose from, and more choices of goods.

Some concerns have been expressed about ensuring fair practices in the food trade:

- That safety standards should be based on science and risk assessment
- That product standards should not be trade-biased or discriminatory
- The standards must be achievable and relevant
- That labelling requirements should be fair, useful and facilitate trade
- That QA protocols should be pragmatic, not overbearing

Now, all of these things are also what manufacturers want! The objectives of food manufacturers are to produce safe food, to produce quality food and in order to do so, to utilise their manufacturing facilities in the most efficient manner.

What this means is that manufacturers accept the Codex Standards as they provide sound, science-based food standards and are therefore excellent guidelines for manufacturers to produce safe food. The result is, naturally, safe and quality foods for consumers.

Codex Standards minimise food standards barriers, and therefore the situation allows for the easier movement of food and food products across international borders.

For the consumer, this means many more choices in the market. This eventually may lead to common product formulations and common packaging among countries, allowing corporations more efficient utilisation of their manufacturing facilities in any region. The argument that this will mean cheaper products for the consumer then follows through.

To conclude, let me reassure all of you that manufacturers support the regulatory system, under which we comply with food standards and play a constructive role in the setting of food standards. We also support consumer demands, in that we provide value-for-money goods, and we do communicate science-based food information to consumers.

Pesticide Residue

Presented by Ms Revathi Ramachandran
Officer, Pesticide Action Network
Asia and The Pacific

Introduction

The inherent toxicity of pesticides destroys not only the target pest but also the beneficial ones causing ecological disruption, pest succession and pest resistance, which can pose hazards to man and the environment. Consumers have expressed increasing concerns about pesticide residues in their food as a consequence of crop protection. In vegetable production, for example, the use of pesticide is excessive reaching up to 15 times per cropping season. In rice, residues at harvest may not be as significant as in vegetables but the danger lies in the usual practice of draining the treated paddy water in irrigation canals which is eventually emptied into the lake down to the sea. Aquatic organisms have the ability to biomagnify the residues in water. Even large animals feeding or drinking in contaminated waters can bioaccumulate the residues of these pesticides. Moreover, rice during post harvest treatment and storage usually receive higher dosages of pesticides so the residues on grains have high probability of exceeding the maximum residue limits (MRL) set by World Health Organisation (WHO) / Food and Agriculture Organisation (FAO).

General Information On Pesticide

Environmental contaminants, especially pesticide residue in food and water, are now having serious effect on our health and reproduction. Over 600 man-made chemicals are registered with the EPA as killing agents under the broad term pesticides. Most pesticides are insecticides, fungicides or herbicides. Poisoning is chiefly associated with insecticides since most of these are neurotoxic and hence affect the nervous system. The commonest groups of insecticides used are the organochlorines, organophosphates, carbamates and pyrethroids.

Organochlorine

- Compounds that contain carbon. Very persistent implying a chemical stability, which gives products long lives in soil and aquatic environments, and in animal and plant tissues.
- Not readily broken down by microorganisms, enzymes, heat or ultra violet

light.

- Affect the neuron or nerve fibers in a way that prevents normal transmission of nerve impulses in insect or mammals.

Organophosphate

- Compounds derived from phosphoric acid, generally the most toxic of all pesticides to vertebrate animal.
- Chemically unstable or non-persistent and breaks down quickly.
- Attacks the cholinesterase, an enzyme in the blood, that nervous system needs to function properly.

Carbamates

- Derivatives of carbamic acid. Kills insects in ways similar to organophosphate.

According to the United States Food and Drug Administration (US FDA), the FDA laboratories monitor 261 foods up to 300 pesticides. On average, there are over 2 pesticides found per sample and in a given day each consumer consumes about 20 different doses of pesticide. The additive and accumulative effects are unknown. Some experts now feel that these residues may be a contributing factor and often the leading factor in major diseases that occur because our endocrine (including immune and nervous) systems are not functioning in hormonic balance.

DDT

The U.S government banned the use of the pesticide DDT and Malathion which is the most commonly used insecticide, a known endocrine disruptor that can cause reproductive problems in 1972. Yet until today residues of DDT (includes "breakdown" chemicals DDE and DDE) is found in both animal and human blood samples. DDE is a potent androgen (male hormone) biocker and may be the major factor in the decline in male sperm count in industrialized countries. The family of organochlorine pesticides is stored in human body fat and is accumulative owing to their high persistence and lipophilicity (solubility property in fat). Organochlorines are passed on via stored body secretions, such as milk and are not eliminated through kidneys as they are hardly water soluble. Other harmful effects are kidney and liver damage, birth defects, partial paralysis, yellow vision, and irritability and is a probable human carcinogen (cancer causing agent). Potential damage to an unborn fetus is great. DDT has been known to cause sexual disorientation in animals and birds when mothers were exposed prior to and during pregnancy.

Residues

The pesticide which is on the leaves, skin or other surface right after application is the deposit. Sometimes the deposit can be easily seen, as with many dusts or wettable powders. At other times it cannot be seen with the naked eye. If the pesticide deposit remains on the surface for a period of time, it is called a residue. Heat, light, moisture, soil organisms and other chemical reactions in the environment quickly break them down. There are some pesticides, which don't break down and leave a residue on the crop or in the environment for weeks, months or years. Depending on how and where it is used, each pesticide will very in how long a residue remain on the crop or surface. Besides leaving residues due to direct application, pesticides also tend to drift over from nearby application area and leave residues on a crop. The chemicals which remain on food or feed are hazardous to those eating them. The residues may remain in the soil to interfere with crops that are planted at a later date. The maximum amount of residue, which may remain, on a harvested crop is called a tolerance. Tolerance level is defined as the level in which the chance of cancer is increased at a factor of one in a million during the lifetime of projected exposure. This is a carcinogen rating. However effects of pesticide interruption of our hormone, immune and nervous system as well as brain function is not taken into consideration

Pesticide Residue In Food Supply

Although in most cases the level of pesticide shown is within the Acceptable Daily Intake (ADI) hence is thought to be safe, by itself, the additive and accumulative effect on our bodies is unknown. This is because our lifetime exposure cannot be calculated. Also bioconcentrations/bioaccumulation are difficult to calculate. According to a study on the rice paddy ecosystem, when carbosulfan (insecticide) was sprayed on rice, most of the residues went to the target plant (77%), to water (11.4%), soil (9.5%), fishes (1.1%) and the atmosphere (0.03%). After an equilibrium period of a few days, most of the residues were deposited on soil (40%) and water (20%). 12% remained in plants and 0.03% in the atmosphere.[1] Crops seldom contained residues in rice grains at harvest time. This is because of the long interval between application of pesticides and harvest of rice. Residues remaining in fodder eaten by animals are distributed in the different parts of the animal tissues with the highest level retained in the fat and liver. The danger of pesticide contamination on grains occur during post harvest treatment of grains stored in warehouses to protect them against storage pest. A 1% to 2% solution of chlorpyrifos or malathion which are organophosphate insecticides sprayed on sacks containing rice and corn

1 The Philippines Agriculturist by A.W. Tejada

remained on the grains for at least 6 months. Chlorpyrifos is quite resistant to heat and its residues in boiled rice persist even if the pot is covered while cooking.

Various food groups for amounts and levels of pesticide concentration.

Fish	- Fish concentrates the toxins about 3000 times more than the water they live in.[2]
Fruits and vegetable	- Fruits tends to be more heavily sprayed. E.g. oranges, apples, tomatoes, peaches. - Receive the highest amount of herbicides, fungicides and pesticides. Have the highest amount of violate residues.
Grains	- Most receive about 20% as much herbicides as fruits and vegetable. - Pesticides are used for the storage purposes during the post harvest period
Milk, Dairy products and Eggs	- Low in violate but frequent residues.
Meat	- Most frequent residues detectable are pesticides applied directly to the animal. Other residues are from feed, soil, water, acid rain and air pollution. - Likely to contain the pesticide DDE, a persistent metabolite of DDT.

Bioaccumulation/Bioconcentration

Bioconcentration is a theory of concentration of residues that can occur from all that we consume. The initial concentration starts at the beginning of the food chain combined with the lifespan of the consumer that determines the concentration in our bodies. As we look higher up the food chain, each level has a higher concentration. For example in polluted lake water the chemicals settle to the bottom and are consumed by algae. The algae are consumed by plankton and invertebrates, which are food for the fish, which in turn are eaten by man or birds. By the time the chemical reaches man, it may be at a concentration of 10000 to 20000 times higher than that of the water of the lake. In many developing countries, fish constitutes the most important source of protein. They are commonly caught in rice fields and lakes that are directly or indirectly contaminated with pesticides sprayed for agricultural purposes and vector control. Bioconcentration depends on the beginning amount of pollution, number of levels in the food chain, size and age of the plant, animal or human as well as the length of time of exposure. Bioconcentration can occur from plant to man or plant to animal to man. For example,

2 "Toxics A to Z" by Harte, Holden, Schneider and Shirley.

aquatic plants such as kangkong, Ipomea aquatica, absorbed residues of pesticides through the roots and is concentrated in the older leaves.[3] The initial contamination at the start of the food chain combined with size of the consumer and lifespan then determines the final results.

Dioxin In Vietnam

From 1962 to 1971, the US military aerial sprayed 42 million liters of Agent Orange in Vietnam to deny the communists fighters' forest cover. Agent Orange, a herbicide containing the chemical compound TCDD is throwing up its ominous aftermath now. The dioxin in the herbicide has seeped into the soil and accumulated in the water bodies finding its way into the bodies of the residents through their food. Dioxins are not volatile and are extremely persistent. Since dioxins are fat-soluble, they bioaccumulate up the food chain. Both war veterans and people living in the area are living in agony. Their children are born with mental retardation, physically deformed with low IQ, skin tumor and spontaneous abortions are routine. The EPA study emphasizes that dioxins can prevent the immune system from developing properly in an unborn child with life long consequences thereby endangering the new generation. [Excerpt from Down to Earth. August 2001.]

Young Children At Risk From Pesticide Residue

Young children consume more pesticide residues in food than any other age group. This is due to the fact that young children consume more food compared to their body weight than men and also because the types of food they eat more of like fruit tend to be more heavily sprayed. Exposure to pesticide early in life can lead to a greater risk of chronic effects that are expressed only after long latency periods have elapsed. Such effects include cancer, neurodevelopmental impairment and immune dysfunction.[4]

Pesticide Levels in UK Baby Food above New Limit

LONDON, United Kingdom, December 4, 2000 - Test on baby food carried out by a UK government watchdog have discovered pesticide residues that may disrupt the hormone system. The committee which advises the government on pesticides issues, test fruit based baby food, lettuce, broccoli, milk, duck, salad cream and nut butters. In addition to finding carbendazim in baby food, it found other pesticides in broccoli, lettuce and strawberries. Designed to kill fungi, carbendazim was listed by the German government as a potential human-hormone disrupting chemical in 1999. The chemical has been shown to damage the production of sperms in rats and in the development of the testicles. *(Excerpt from the Environmental News Service)*

3 Bajet and Magallona, 1992

4 National Academy of Science, 1993

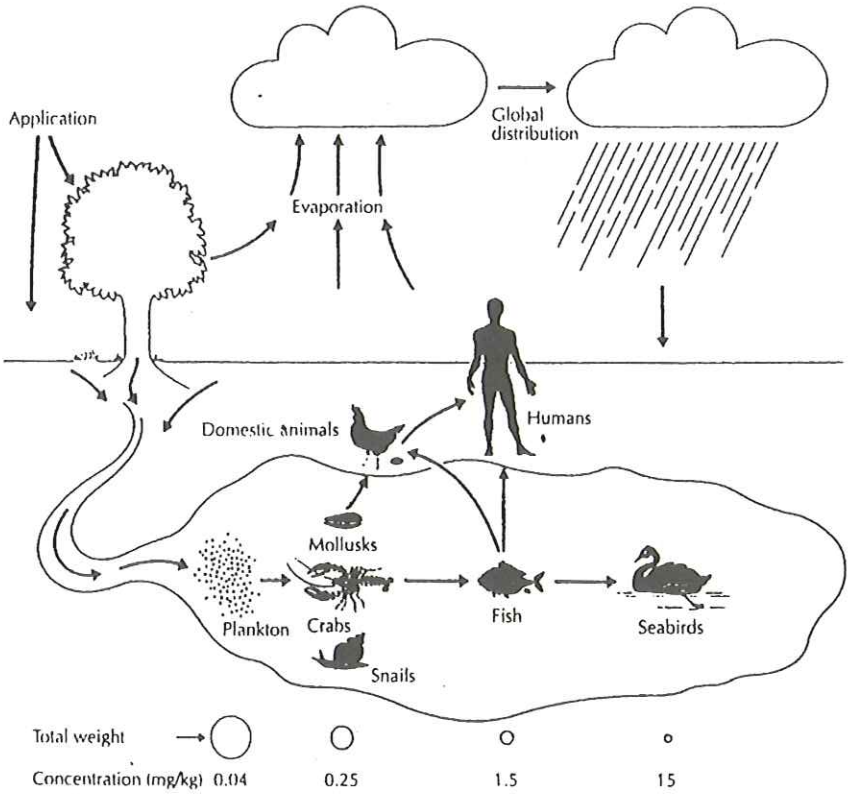


Fig. 8: Distribution and fate of pesticides in the environment. The process of accumulation is characterized by increasing concentration with decreasing total weight (67).

Susceptibility to carcinogens :

- Linked with rapid cell division entailed in development and growth.
- Children have more of their lives still to live during which exposure and carcinogenic action may occur.

Susceptibility to neurotoxins

- Children are especially susceptible to substances which cause nervous system damage such as the acute effect of organophosphate insecticides.
- The barrier inhibiting the passage of compounds from the blood into the

brain is not fully developed in children.

- The process of myelination, in which nerve fibers are covered by a protective fat-like substance called myelin, is not fully complete until adolescence.
- The blood capillary system in the brain is not fully developed and nerve fibers are still branching.
- Behavioral effects that can lead to learning difficulties may follow relatively low dose exposure and permanent learning difficulties may follow sufficiently high dose exposure to organophosphate.
- A number of studies suggest that organophosphate and carbamate exposure before and immediately after birth can cause delays in reflex and sexual development.

Damage to the immune system

- Few studies done on humans from Canada and the Soviet Union find children and adults exposed to pesticides suffer immune system alterations and higher rates of infectious diseases and the risk is known to be the greatest to infants and those who are malnourished or chronically ill.
- The study showed that children who lived in the agricultural districts had suppressed immunity and were three times more likely to have infectious diseases of the digestive tract and respiratory tract.
- Multiple, chronic exposures to chemicals that attack immune response may erode the immune system's multiple defenses enough to make the body vulnerable to viruses and bacteria that, while always present, generally do not trigger disease.

Pesticides In Low Dosage

While some scientist think that there is threshold below which no cancer can occur, other scientist have found that no threshold for carcinogens or cancer causing agents is suggested. Significant tumor responses have been found even at the lowest doses of carcinogen tested. Certain impacts following to the exposure to the endocrine disruptors are observed only at very low concentrations and disappear at higher doses. This is apparently because higher doses may trigger a detoxification mechanism and cell metabolism changes that mask the low dose effects. The changes often convert the invader to a more toxic form or may block or disrupt other functions.[5] All testing of pesticides, when it has been done is done on one

5 Benbrook, 1996

particular chemical on animals. This certainly does not reflect reality where we are exposed to a cocktail of chemicals with every mouthful we take. Possible synergistic effects where one chemical may interact or combine with another to form a more toxic compound are not taken account of.

Questions from the floor

Synergistic effects may:

- Slow down the normal detoxification of one pesticide or chemical.
- Hasten the conversion of one chemical into a more active form.
- Depress immune response or render a particular organ system temporarily vulnerable to disease.

One study in Italy, designed specially to reflect both the levels of exposure commonly found in the human food supply, as well as thew distribution of residue levels, found the mixture of 15 pesticides impaired liver functions and induced free radical damage of DNA at low doses in rats. Significantly, the DNA damage was not observed at higher doses administered.

Pesticide Degradation: Exceptions To The Rule

The common consensus among those familiar with food processing methods is that pesticide residues decrease during processing and food preparation. The process of washing and peeling fruits and vegetables generally results in significant declines in the amount of pesticide detected in the food. This is especially true for pesticide residues that are found only on the surface of the commodity. The amount of pesticide removed, if any, depends largely on the pesticide, the commodity and the process used. However to be effective, situations where residues may concentrate or where more toxic metabolites may be formed during processing has to be considered.

Pesticide Residue Poisoning in Hong Kong

Vegetables and fruits produced in the southern area of China called Shenzen and then exported to Hong Kong. Between 1989 to1991 many people were poisoned by eating vegetables imported from Shenzen into Hong Kong. Almost 400 people were poisoned. At that time, Hong Kong was an independent country and the

government investigated the cause of the poisoning. Metamidophos a type of organophosphate was found as the cause of the poisoning. This pesticide is different from other organophosphate. It goes into the vegetables while other pesticides remain at the surface of the vegetable. Washing the vegetable and cooking it in hot water does not eliminate the residue and reduce toxicity.

A typical example would be a fat soluble chemical used on citrus. While the peeled fruit tends to be virtually free from the traces of the chemical, the fruit peel on the other hand will tend to have relatively higher residue level. Vegetable oils may also have higher residues if they are not refined. In other cases, heat treatment does not necessarily result in a reduction of pesticide residues. The actual structure of the chemical determines the stability proponents of the compound. For instance, baking does not result in a decline in pesticide (thiabendazole - fungicide) residues in potatoes. Similarly thermal processing does not result in a reduction in pesticides residues on apricot. Exceptions may also occur when processing causes the chemical to degrade, creating a chemical that is more toxic than the parent chemical. When produce treated with daminozide a growth retardant herbicide is cooked, its metabolite, a moiety much more potent than the parent compound, increases in cooking via degradation of the parent compound. Such breakdown products are also formed when foods are treated with acid or basic solutions. Another situation where exceptions may occur is when the chemical is introduced into the food during processing.

Typically, this occurs during post harvest pest control, when the pesticide is applied to avoid infestation with insects, molds or other pest.[6] There is always toxic pesticide residue left in food whether it's cooked or otherwise and it's just a matter of concentration. When the data shows that a certain residue level of pesticide is within certain acceptable limit this refers only to the acute toxicity. The analysis report will show zero level of pesticides but that zero doesn't mean no residue but the analysis procedure can't detect the lower concentration level in that item. We should always assume that no matter how small the amount even if we can't see in the analysis report that there is a significant amount remaining in food and have to assume that there is a small level that is potentially toxic over a long term. Even the smallest amount of pesticide can be toxic.

Pesticide Residue in Japan

The pesticide called acetate 1 registered in Japan. The pesticide is used to control insects in the golf course. If acetate is boiled in water then it can become an

6 Barbara Petersen, J.Robert Tomerlin, Leila Barraj

organophosphate called metamidophos, which is a very toxic compound. People in the neighborhood around the golf course claimed that the pesticide used is dangerous and made appeal in the court. The Court authorities said that the pesticide is safe because of its low acute toxicity. Metamidophos takes very long to decompose and this causes a high risk of bioaccumulation in the food chain of the people.

Hazards For Ecosystems

Contamination of the air

When pesticides are applied, only a small fraction of the amount sprayed actually reaches target organisms such as crop pests and vectors of disease. More of half of the amount of pesticides applied may go directly into the atmosphere during spraying. Pesticides can be transported over large distances and are washed out in the rainfall. This process is responsible for long-range distribution over continents and surface water. Traces of pesticides can now be detected everywhere on earth -in the penguins of Antarctica as well as in the body fat of Inuit in Alaska, where pesticides have certainly never been used. Pesticides contaminate the atmosphere, passing into the air in various ways: through wind-drift during spraying, through evaporation of active ingredients from the surface of the soil and from plant surface and through wind erosion of contaminated soil particles. Pesticides move freely in the air and return as either dry or wet deposits to the surface of the earth.

Contamination of the soil

Pesticides applied end up in the soil and in open bodies of the water. Via surface runoff, soil erosion and leaching, pesticides eventually arrive in the ground water. Many pesticides are adsorbed rapidly and non-specifically in the humus layer. The presence of pesticides directly or indirectly influences the microfauna in the soil and can alter decomposition and circulation of nutrients. Pesticide residues in soil can be directly toxic to soil organisms or can exercise a subtle effect, e.g. influence activities, behavior, reproduction and metabolism. This permanently impairs and alters the closely interactive ecosystem. Soil organisms such as earthworms suffer toxic reaction due to the use of pesticide even at the recommended dosages. Herbicides showed harmful effects on soil fauna. Pesticides that remain in the soil can produce residue problems in subsequent crops. It degrades soil fertility, ultimately producing essentially biologically sterile soil. Residues in plants and fruits which reenter the food chain also increases drastically.

Japan Case study

In the mid-1980s, a study was made of the water of Mashu Lake on the island of Hokkaido in northern Japan. This lake developed around 7000 years ago in the crater of a volcano. It is bedded in solid rock and receives no water from streams or rivers. It is entirely fed by rainwater and runoff by the surrounding rock. Measurements taken over many years revealed steadily higher concentrations of lindane an organochlorine insecticide. Lindane has not been used in Japan since 1971. The only possible sources are China and Korea, where lindane is often applied.

Pesticide residue in breast milk

When a woman eats or drinks polluted water or food, or breathes contaminated air, the organochlorine pollutants are readily dissolved in her fatty tissues. They are stored there until lactation begins, when the contaminants migrate to her highly fatty milk. This pollution transfer from one generation to the next is unavoidable since organochlorine chemicals are now well distributed throughout the environment. Organochlorines were first detected in breast milk in 1951 when DDT residues were found in the milk of American women. Since then there have been hundreds of breast milk studies, all indicating continuing pollution by the chemical.

High pesticide residue in mother's milk : Study

Hyderabad - In a startling discovery, mother's milk, considered the best feed for babies, is no longer safe, especially in the agriculturally-fertile Krishna delta region of the state. According to the studies conducted by scientist at the Andra Pradesh Agricultural University here, the percentage of pesticide residue in the milk of mothers in Guntur and Krishna districts is the second highest in the world, next only to that in Guatemala. The data on residues revealed that 100% contamination was observed with gamaxene (insecticide), 69% with DDT. According to the WHO study, gradual increase in pesticides has led to pests becoming more resistant, thereby further pushing up the consumption of toxicants. [Excerpt from the Indian Express Newspaper].

Ms. Revathy presenting her paper

Conclusion of the workshop

From the workshop, the participants voiced out their concerns on the importance of safe and clean food. Good habits such as washing hands and cleaning raw food before cooking need to be practised to ensure the hygienic aspect of the food. The consumers and food handlers need to be educated on the importance of hygiene. There was also a suggestion to have a "Hygiene Campaign" for food handlers and consumers.

The nutrition aspect depends on each individual as well as different culture that has been emphasised on food production. A proper nutritious meal helps to develop a person from the time they are young. Everyone needs to play an active role in ensuring the availability of nutritious food. Labeling of food is very important for consumer to help them make informed choices. It is also important for health reasons, religious ground and for cultural reasons.

ERA Consumer Malaysia would like to continue the education and awareness process on issues related to food with the support of the consumers. ERA would also like to have urge for a stronger enforcement on food standards to protect consumers healh and welfare.

Participants thanked ERA Consumer for conducting this workshop and hoped that ERA would continue the effort to focus on important aspects of food safety and food standards.

A healthy mind comes from a healthy body.

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About **ERA Consumer**

The Education and Research Association for Consumers, Malaysia (ERA Consumer, Malaysia) is a voluntary, non-profit and non-political organisation that was founded in Ipoh, Perak in 1985. ERA Consumer is a registered membership organisation under the Malaysian Societies Act of 1966. It was set-up to undertake and promote the task of developing critical consciousness on public-related issues out of the larger socio-economic issues.

ERA Consumer is a dynamic institution that is constantly responding to and developing its services according to the needs and demands of the people. It aims to create awareness among the public on issues that are effecting their lives, through research and educational programmes by undertaking independent, authoritative, balanced research on public issues; carrying out public education projects; making policy recommendations to the government & international institutions; building solidarity and understanding among NGOs in Malaysia and society at large, and to increase South-South relations and North-South understanding. ERA Consumer's components and main programmes are consumer issues; human rights education; food, trade and economics.

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