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TECHNICAL REGULATIONS AND FOOD SAFETY IN NAFTA

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INTRODUCTION

The range and diversity of technical regulations and voluntary standards that influence the level and direction of trade flows is large indeed. This paper discusses the role of technical regulations in the international food sector with a focus on sanitary and phytosanitary (SPS) measures and technical regulations in NAFTA. It defines and describes technical regulations and voluntary standards. This is accomplished by defining the terms and specifying the targets of the regulations. The second task presents the NAFTA SPS measures and then discusses some of the disputes that have arisen from them. The generic discussion of technical barriers leads to a full-fledged discussion of a technical barrier which reached the level of a lengthy trade dispute between the United States and Mexico. The trade dispute arose from a 1914 U.S. quarantine of Mexican avocados. The paper ends with an examination of food safety strategies countries can adopt to address food safety issues.

TECHNICAL REGULATIONS AND VOLUNTARY STANDARDS

Technical regulations are national or international government-enforced legal requirements imposed for health, safety, or environmental reasons. Voluntary standards, on the other hand, are nationally or internationally-accepted procedures and guidelines adopted in order to maintain consistent quality. ISO 9000 is probably the most recognized voluntary standard in the world. It is important to emphasize that a voluntary standard, like ISO 9000, is not a substitute for either product safety or other regulatory requirements. Instead, a voluntary standard like ISO 9000 specifies the elements necessary for quality systems to consistently meet specifications. When implemented nationally, technical regulations and voluntary standards can serve as barriers to trade. Kinsey (Ndayisenga and Kinsey, 1994) noted that approximately one-third of the non-tariff barriers used for all countries for agricultural products were technical regulations and standards.

The dimensions of the potential impact of technical requirements of trade in food and agricultural products is illustrated by delineating the attributes of food affected and by discussing the regulatory regimes that may be used to govern those attributes. Table 1 groups the several product attributes governed by technical regulations and voluntary standards into four major categories: 1) food safety, 2) nutrition, 3) value, and 4) packaging. Hooker and Caswell (1995) identify food safety attributes, such as food borne pathogens, as the most important food attribute.

The importance of each food attribute as an impediment to trade, of course, varies. Food borne pathogens, which can affect human, animal or plant life, are at the center of many technical regulations and are at the center of many trade disputes. Foot-and-mouth disease and rabies are examples of food borne pathogens that affect animal health. Residues of veterinary treatments in meat and meat products and of pesticides on plant products are important concerns for many countries and are also the target of many technical regulations. *E. Coli* and *listeria monocytogenes* are examples of food borne pathogens that can dramatically affect human life. In December 1992, for example, an outbreak of food-related illness affected 500 people after eating *E. Coli*-contaminated hamburger from a Washington fast-food restaurant. A recent 1996 *E.Coli* outbreak in Japan resulted in widespread illness and in several deaths. In this paper, we concentrate on food's food safety attributes with a particular focus on measures adopted in trade agreements to address them.

Other technical regulations are not as well known, but nonetheless have important trade impacts. Labeling regulations, such as Canada's requirement of bilingual labels, can have important trade impacts by increasing production and transaction costs.

The food attribute targets in Table 1 can be met by a number of regulatory regimes. For example, preventing the introduction of foot-and-mouth disease, a food borne pathogen, could be accomplished by specifying production and processing standards (eradication versus vaccination), by performance standards, or by conditions of sales and service requirements. Pesticide residues could be controlled by establishing input standards, by specifying certain acceptable production practices, or by testing for product characteristics. But, the test procedure itself could be a point of contention between countries.

Table 1. Food Attributes Governed by Technical Regulations and Voluntary Standards

Food Safety	Nutrition	Value (Sensory)	Packaging
Food borne Pathogens	Calories	Purity	Packaging Material
Heavy Metals	Fat & Cholesterol	Compositional Integrity	Labeling
Pesticide Residues	Sodium	Size	
Food Additives	Carbohydrates & Fiber	Appearance	
Toxins	Protein	Taste	
Veterinary Residues	Vitamins & Minerals	Convenience of Preparation	

Source: Hooker and Caswell, Roberts and Siddiqui

Table 2 summarizes the several regulatory regimes that can be used interchangeably to govern food attributes. An additional complication is that voluntary quality assurance or control schemes can be adopted to meet the same targets as regulatory regimes and they could also serve as technical barriers. However, some of the schemes are outside the purview of the World Trade Organization (WTO) and of bilateral negotiations. The WTO is important in trade disputes because it is the final arbiter in deciding whether a set of requirements is justified by scientific evidence or are non-tariff barriers (Flickinger, 1995).

Table 2. Matrix of Regulatory Targets and Regimes

Regulatory Targets	Regulatory Regimes					
	Input Standards	Process Standards	Performance Standards	Information Requirements	Conditions of Sale or Service	Conditions of Use
Food Safety						
Nutrition						
Value (Sensory)						
Packaging						

Source: Hooker and Caswell, p.6

The selection of regulatory targets is conditioned on the cultural, political and social fabric of a nation. For example, unpasteurized cheeses can not be produced in the United States, but they are widely produced and consumed in France and other European countries. The choice of regulatory regimes is, likewise, influenced by national conditions. Britain and the United States still maintain negative lists of food additives that can not be used; all others are considered to be safe (GRAS-generally regarded as safe) and so can be used without restriction. South Korea and France maintain positive lists; if an additive is not on that list, it cannot be used. Domestic food processors have an advantage in the countries that maintain positive lists, because they have immediate access to regulatory authorities and they have a vested interest in clearing the additives they use. Another important cultural difference can be the very basis for the legal system: case-based Anglo-Saxon law versus Napoleonic law.

TECHNICAL REGULATIONS IN THE WTO AND NAFTA

WTO Technical Barriers to Trade (TBT Agreement)

The WTO Agreement on Technical Barriers to Trade (TBT Agreement) states that when members develop and institute voluntary and mandatory product standards and when they set procedures to determine if a product meets the standards, they must not discriminate against imported products and from creating unnecessary obstacles to international trade.

The TBT Agreement affects all technical regulations which are not included in the Sanitary and Phytosanitary (SPS) Agreement such as quality, labeling, packaging and product content. The Agreement encourages members 1) to accept other members' standards as equivalent and 2) to use international standards and work toward harmonization of standards and procedures.

The TBT Agreement contains two mechanisms to facilitate implementation: technical assistance and notification of proposed standards. The TBT Agreement states that all members must notify the TBT Committee of all proposed standards that allow members to submit comments or discuss the proposals in the Committee. Regional and bilateral trade agreements such as NAFTA also contain language about technical barriers to trade such as sanitary and phytosanitary barriers. The NAFTA and WTO Agreements together govern the trade relationship between the United States, Canada and Mexico. The important difference between NAFTA and WTO, as Hooker and Caswell note, is that the WTO has "institutional arrangements for binding arbitration of differences between countries on safety regulation" (Hooker and Caswell 1995, p.13).

Sanitary and Phytosanitary Restrictions

Sanitary (human and animal health) and phytosanitary (plant health) measures are laws, regulations and procedures instituted to protect animal, plant and human health. Sanitary and phytosanitary measures can restrict trade when used for protectionist purposes. SPS restrictions that affect trade recognize the sovereign right of each country to set its own food safety, and animal and plant health standards. These restrictions were permitted in Article XX:b of the GATT (upon which NAFTA is modeled) so that countries could take measures "necessary to protect human, animal or plant life or health", as long as they do not discriminate between countries, nor serve as a disguised barrier to free trade. (GATT Secretariat, p.4) The SPS Agreement of the GATT was designed to "avoid the inherent uncertainties in determining whether import regulations are the equivalent of domestic regulations... (The) Agreement establishes rules as to how import measures are adopted to assure transparency of the rules and to govern the way these rules are applied" (Abbott, 1995, p.18).

NAFTA includes text on sanitary and phytosanitary measures, modeled after the Uruguay Round Agreement on sanitary and phytosanitary measures. Article 756 of NAFTA recommends that the three countries "pursue equivalence of their respective sanitary and phytosanitary standards". This article was drafted to assist in avoiding trade disputes among the three regarding the preparation and processing of food products that are traded. The idea is that the countries pledge to harmonize food production processes to "the extent feasible" and that measures do not become disguised trade restrictions.

SPS Principals and Elements

The NAFTA SPS measures consist of six principals:

1. May adopt any sanitary and phytosanitary measures necessary to protect human, animal, and plant life and health;
2. May establish appropriate levels of protection;
3. Must adopt science-based measures;
4. Must not discriminate between foreign and domestic goods;
5. May apply measures only to the extent necessary to achieve its appropriate level of protection;
6. May not adopt sanitary and phytosanitary measures which create disguised restriction on trade (Roberts and Orden, 1995).

To avoid barriers to trade, the NAFTA agreement encourages countries to use relevant international standards, if existent, when developing their SPS measures. However, each country is permitted to adopt a standard more stringent than international standards to achieve an appropriate level of desired protection of human, animal or plant health if the standard is based upon scientific principles (Looney, 1995, p.369).

The NAFTA signatories have agreed to work toward “equivalent” SPS measures without reducing national levels of desired, appropriate protection. Equivalency recognizes that different methods may be used to reach the same level of protection. Each country agreed to accept the others’ SPS measures as equivalent, provided the exporter shows that its SPS measures meet the importer’s desired level of protection.

NAFTA allows countries to determine their own level of appropriate protection. That said, the level of protection should be based on risk assessment techniques developed by NAFTA or international entities. NAFTA also establishes guidelines on risk assessment which include, for example, the evaluation of the likelihood of entry or spread of pests and diseases.

NAFTA also allows for the adaptation of SPS measures to regional conditions and “to consider the prevalence of specific diseases or pests, the existence of eradication and control programs and any relevant international standards, guidelines or recommendations in adapting SPS measure to them” (Looney, p.373). Looney adds that NAFTA asks countries to consider geography, ecosystems, epidemiological surveillance and effectiveness of sanitary and phytosanitary controls in the determination of pest-free and disease-free areas. NAFTA requires the exporting country to provide scientific evidence sufficient to meet the importing country’s satisfaction.

NAFTA calls for countries to notify and publish proposed SPS regulations at least 60 days prior to implementation. The notification should identify the goods covered in the regulation and the reason for the SPS measure.

There is a NAFTA committee on sanitary and phytosanitary measures which was created to facilitate the enhancement of food safety and sanitary conditions and to promote the equivalence of SPS measures within the NAFTA countries. Under NAFTA, a country may challenge that an SPS measure is inconsistent with the Agreement; the burden of proof

lies with the party making the challenge (Looney, 1995). The NAFTA SPS Committee provides countries with a forum to maintain dialogue or challenge inconsistencies.

That the use of technical requirements as trade barriers will increase seems a reasonable conclusion given various trade agreements' (e.g. GATT and NAFTA) removals of tariffs and other overt trade barriers. Mechanisms, however, have been put into place to effectively challenge those barriers (e.g. import regulations) in order to either get them removed or to compensate the injured party. For example, the use of growth promoters in beef production has been found safe for human health; there is no scientific basis for prohibiting their use. However, the (GATT's) SPS Agreement will not force the European Union (EU) to rescind the ban on the imports of hormone-treated beef, but the EU will be forced to compensate the losses realized by its trading partners.

In total, there are more than 30 NAFTA Committees and Working Groups in areas such as technical standards, rules of origin, and government procurement. These committees and working groups provide members with the opportunity to negotiate measures in trade disagreements.

U.S. SPS Regulatory Agencies All food products, except most meat and poultry products, are regulated by the U.S. Food and Drug Administration (FDA). Imported food products are subject to FDA examination upon arrival in the United States. The FDA determines if imported food products meet the same standards as domestic food products and determines if the food products are pure, wholesome, safe to eat and produced under sanitary conditions. The Food and Safety Inspection Service (FSIS) regulates meat and poultry products and has its own separate regulatory mechanisms for ensuring that meat and poultry imported into the United States meet domestic standards for safety, wholesomeness and labeling.

Safety of food refers to the risk to human health. The risks stem from chemical and microbial contamination and natural toxins. There are also secondary risks which stem from mislabelling of allergens, additives and preservatives. All of these risks are present during the production, processing and distribution of food extending to on-site consumption in homes, restaurants and institutions.

The U.S. Department of Agriculture (USDA) protects domestic agriculture from the introduction and establishment of foreign plant pests. USDA/Animal and Plant Health Inspection Service (APHIS) inspects imported agricultural products guarding the United States against the entry of foreign agricultural pests and diseases at airports, seaports and borders.

EXAMPLES OF AGRICULTURAL BARRIERS

That food safety regulations will be a key element in international trade in food production is not speculation (Hooker and Caswell, p.6). With the increase in trade agreements, the relative importance of non-tariff barriers has increased (Kinsey).

Agricultural barriers to trade between the NAFTA countries are no exception; barriers remain. Kinsey points out that the implications of non-tariff barriers are decreased transparency in protective instruments and increased trade transaction costs (Kinsey, 1994, p.276).

Some of the agricultural barriers described below are either currently under negotiation or have been recently resolved. The next section presents an example of a trade barrier which has reached the level of being a high profile trade dispute.

Canadian Barriers for U.S. Agricultural Products

- Canada restricts the direct export of Pacific salmon and herring by requiring that a portion of the Canadian catch be landed in Canada before being exported. Following a settlement, Canada permits the direct export of a portion of the catch by Canadian licensees.
- Canadian restrictions on international and interprovincial trade of bulk produce pose obstacles for U.S. potato exporters. Additionally, Canadian regulations on fresh fruit and vegetable imports prohibit consignment sales of fruit and vegetables without a prearranged buyer.
- There are Canadian market access barriers for U.S. wine and spirit exporters including cost of service markups, listings, reference prices and discriminatory distribution and warehousing policies.

Mexican Barriers for U.S. Agricultural Products

- Mexican phytosanitary product-specific standards have created export barriers for certain U.S. agricultural products such as grains, citrus, Christmas trees, cherries and cling peaches.
- Since 1994, Mexico has often used “emergency” powers to establish phytosanitary standards which have disrupted trade. “Emergency” rules do not follow the normal rule-making notification process.
- NAFTA required Mexico to comply with the International Convention for the Protection of New Varieties of Plants (UPOV). Although Mexico is a UPOV member and has accepted approximately 2000 plant patent applications from U.S. plant breeders, it has never acted on these applications and it has yet to adopt a plant protection system.

There are also instances in which some barriers have risen to the level of being aggressively disputed through the channels. The U.S.-Mexico trade dispute over a U.S. quarantine on Mexican avocados illustrates this point well.

THE U.S.-MEXICO AVOCADO DISPUTE

Background

A recent longstanding, high profile dispute between the United States and Mexico over U.S. phytosanitary regulations was resolved this February after eighty-one years. In 1914, U.S. officials first established a quarantine prohibiting the importation of Mexican avocados when they identified avocado seed weevils in Mexican avocados. Fearing pest infection, U.S. officials implemented the quarantine which has remained on the books ever since. In the 1970s, Mexico twice petitioned for approval to export avocados to the United States. USDA/APHIS rejected the Mexican requests citing 1) the apparent ease with which seed weevils were recovered in the Mexican state of Michoacan and 2) that seed weevils and Mexican fruit flies were frequently intercepted in fruit contraband at the border.

In the 1980s, Mexico expanded its avocado groves and improved its production processes. Again in the 1990s, Mexico issued several requests for approval to export the avocados to the United States. One of the requests led APHIS in July 1993 to allow Hass avocados grown in Michoacan to be imported into Alaska under certain conditions. Mexico is the world's largest producer of avocados and Michoacan produces over two-thirds of Mexico's total avocado production. Growers and packers in Michoacan adopted sophisticated grove management techniques, packing practices and shipping practices in order to export their avocados. (Roberts and Orden, 1995).

Inspired by NAFTA negotiations in 1994, Mexico requested extended entry for Hass avocados to be imported into the northeastern states. APHIS acted on the request, drew up a proposal to allow fresh Hass avocados from Michoacan to enter certain areas of the United States, and then solicited comments as the process requires. Finally, on February 5, 1997, APHIS published its final science-based rule allowing Mexican Hass avocados to enter certain U.S. states under a systems approach.

Issues

U.S. Avocado Growers On one side, the U.S. avocado growers from California and Florida voiced their discontent about lifting the quarantine on Mexican avocados citing fear over the pest risk to the U.S. industry. Domestic producers also expressed concern about Mexico's ability to guarantee pest mitigation procedures as called for in the proposal.

On the other side, growers and others voiced concern that the continued prohibition on Mexican avocados could result in a third country regulatory standard that would affect U.S. products. The concern, for example, was that Mexico would impose standards against U.S. wheat, apples, peaches and cherries.

SPS Elements at Issue Mexico maintained that there was no scientific reason to reject the systems approach proposal; with the quarantine, Mexico argued, the United States had

established a high standard of protection. Mexico also argued that surveys indicated that host-specific pests had been eradicated from avocado export producing areas and that the fruit fly populations were low in these areas. Mexico challenged the United States that it was not complying with trade agreement provisions and allowing trade from low pest prevalent areas. Additionally, Mexico argued that pre-harvest, packing, transport and shipping practices had been implemented to minimize the risk of pests in avocado export shipments.

The U.S. Restrictive Quarantine "Q56" "The PPQ (Plant Protection and Quarantine Program) administers the Fruit and Vegetables Quarantine 7 CFR 319.56 which establishes the terms under which fruits and vegetables can gain entry into the United States" (Roberts and Orden, p.10). The restrictive quarantine, under which the Mexican avocado quarantine falls, is referred to as "Q56".

According to Q56, APHIS can grant an import permit if the fruit or vegetable:

1. is not attacked in the country of origin by injurious insects;
2. has been treated or is to be treated for all injurious insects that attack it in the country of origin;
3. is imported from a definite area or district in the country of origin that is free from all injurious insects; or
4. is imported from a definite area or district that is free from certain injurious insects that all other injurious insects have been eliminated by treatment or any other approved procedures. (Code of Federal Regulations, p.220)

Rule Making Process USDA/APHIS issued a proposal in 1995 to allow fresh Hass avocados grown in Michoacan be imported into the United States under certain conditions. Following that, USDA provided 105 days of comment period for scientists and independent scientific panels to present their views on the proposed rule. The comment period included five public hearings across the country and collected over 2,000 comments. Over half of the comments came from the avocado industry; and, 85 percent of the comments opposed the rule. The final rule was based on a thorough scientific risk assessment which recommended that a "systems approach" would be appropriate.

Resolution Mechanism: "Systems Approach"

On February 5, 1997, USDA/APHIS published a new rule that allows the importation of avocados from Michoacan, Mexico under certain conditions. The rule is based on scientific risk assessments that include a series of interrelated restrictions termed a "systems approach". The rule contains APHIS' requirements which were devised to prevent the entry of any exotic plant pests which attack avocados into the United States. Under the systems approach, commercial shipments of fresh Hass avocados grown in approved orchards in the Mexican state of Michoacan may be imported into 19 northeastern states and the District of Columbia from November through February.

The systems approach safeguards are designed to progressively reduce risk to an insignificant level. The safeguards make up what is termed a “fail-safe” system which means that if one of the mitigating measures should fail, there are others in place to ensure that the risk is managed and reduced. It is a system of safeguards which occur consecutively in stages. The nine mitigating measures consist of: 1) natural host plant resistance to fruit flies; 2) field surveys; 3) pest trap and bait measures in the orchards; 4) field sanitation measures; 5) post-harvest safeguards; 6) winter shipping; 7) packinghouse instructions; 8) port-of-arrival inspections; and 9) limited U.S. distribution. USDA oversees and supervises all of these stages. Should pests in the avocados be detected at any stage in the system, avocado imports may be suspended from affected areas. Clearly, the final rule does not imply guaranteed entry for the Michoacan avocado growers; avocados can only enter if all the safeguards are met.

Systems approach resolution mechanisms are not novel in agricultural trade. Systems approach requirements are also used to allow the United States to export fruits and vegetables from areas that are not free of certain pests, including citrus from Florida to Japan and apples from Washington State to China and Japan. The United States also uses the systems approach to import products like Japanese Unshu oranges, Spanish tomatoes, and Israeli peppers.

Implications

To address the concern that Mexican avocados are diverted from approved destinations to California and Florida, each imported avocado must be individually labeled with a sticker of origin. Additionally, each shipment must be made in a sealed container with the Northeast destinations labeled. States in other areas have instituted a look-out for diverted avocados.

From an economic perspective, USDA estimates that approximately eight percent of the U.S. avocado production is sold in the 19 states where the Hass Mexican avocados will be imported. As a result, it is estimated that the rule will only have a limited impact on U.S. producers. APHIS believes that consumers stand to benefit from the systems approach.

FOOD SAFETY STRATEGIES: INTERNATIONAL STANDARDS AND COORDINATION

The U.S.-Mexico avocado trade dispute over U.S. phytosanitary regulations illustrates the issue that resolution of SPS issues can be complex, even when national SPS measures are science-based. One means countries have for addressing SPS issues is to adopt relevant standards or regulations such as ISO 9000 or HACCP. That said, the trade agreements allow countries' standards to be more stringent than international standards. Since trading partners

may have different food safety concerns, they may therefore have differing food safety strategies. How these strategies coexist can be important.

Rapprochement Strategies

There are various strategies countries can adopt to address food safety. Jacobs proposed three strategies for reducing international trade conflicts arising from differences in non-tariff barriers to trade, of which technical regulations and voluntary standards are a subset:

- **Harmonization:** standardization of regulations in identical form.
- **Mutual Recognition:** acceptance that alternative technical regulations, systems and standards can lead to the same level of food safety and quality. Hooker and Caswell equate this approach to “reciprocity” in the Canadian-U.S. Free Trade Agreement or “equivalency” as used in GATT.
- **Coordination or alignment:** the gradual narrowing of difference between alternative technical regulations, systems and standards, perhaps based on voluntary international codes of practice.

Hooker and Caswell use the term *rapprochement* to add a qualitative dimension to the reduction of trade tensions and disputes arising from differences in technical barriers and voluntary standards. The level of *rapprochement* would be strong, for example, if identical technical regulations were adopted by trading partners. Each of the strategies is discussed in turn starting with the strongest level of *rapprochement*, harmonization, and ending with the weakest, coordination.

The following example illustrates the futility of attempts to harmonize technical regulations and voluntary standards. Peckham (1996) compares green colors to signify “safety” for warning symbols:

“Safety green is the one color that is markedly different between two standards. The ANSI (U.S. standard) color range for green is slightly bluer than the range for green specified in ISO (an international standard.) There is a reason for this. In the United States we recognize that approximately 4 percent of the population has color blindness that cannot easily distinguish between certain shades of red and green. Making the specification for safety green bluer helps the red/green color blind person to perceive a difference” (Peckham, p.25).

Should the United States prohibit the importation of products that use the ISO color scheme or should it ignore the welfare of a small, but perhaps vocal, segment of its population? Clearly, agreement on something as seemingly simple as the color green may not be possible!

Mutual recognition is a formal agreement among nations that a product legally produced in one country can be sold in the other nations. This approach is the basis for food

safety in the EU. This approach was adopted after it became apparent that agreement could not be reached on even simple and seemingly insignificant aspects of a harmonized food safety system. As a concept, mutual recognition will likely work better between fewer countries with closely related legal systems and similar cultural values. This should be the case for the United States and Canada.

The final strategy, coordination, is the strategic approach that will be followed by the United States. (Thiermann, 1995) The U.S. approach is summarized as: "Although the SPS principles are intended for global application, the rapid implementation of these concepts relies on a series of bilateral and multi-lateral agreement between willing trade partners using the WTO-SPS as an umbrella." (Thiermann, p.42).

Challenges for Food Safety Rapprochement

There are several challenges which confront nations operating in the international food sector. Specifically, nations face two imperatives as the more liberal trading regimes for agricultural and food products promote export opportunities and import competition. First, nations must develop regulatory regimes capable of assuring the safety of the food of both domestic and international origins. In this paper, the importance of food safety attributes was discussed, as were the means of regulating them. According to the WTO and NAFTA agreements on SPS, the regulatory regime which is selected for food safety attributes must be based on appropriate science and risk processes and applied evenly to domestic and imported goods. Therefore, a nation's food safety regulatory regime (e.g. process standard) must meet SPS requirements or risk WTO or NAFTA action. National food safety regimes must meet a country's international obligations and be able to withstand the scrutiny of its international trading partners.

One "example of developing rapprochement of country-level food regulations is the widespread movement toward adoption of a Hazard Analysis Critical Control Point (HACCP) approach to assuring microbial food safety" (Hooker and Caswell 1995, p.13). Both the United States and Canada are in the process of moving toward the adoption of HACCP, but in different manners. To the authors' knowledge, Mexico has not taken measures to adopt HACCP. Caswell and Hooker believe that neither harmonization nor mutual recognition will occur on the NAFTA HACCP front, due, in part, to the different microbial food safety regulations. Additionally, the US HACCP system for meat and poultry products is complex. Coordination is, therefore, likely to occur between the trading partners. At this date, it is clear that regulatory differences concerning HACCP are being established among NAFTA countries.

In contrast, the EU member states are striving for harmonization with HACCP. The 1993 EU hygiene legislation called for all food businesses in the EU to adopt a risk management tool like HACCP. To date though, this has not occurred. Harmonization is complicated by national differences such as tastes, wealth and income distribution. (Orden, Roberts and Josling, 1996). EU members have adopted the legislation to varying degrees as

food safety policy tends to differ from country to country. So, the different national approaches to HACCP may pose technical barriers to trade in the future.

Second, countries must adopt efficient regulatory regimes so that producers remain competitive in the domestic and international markets. With the globalization of the food sector, nations need to be aware of their trading partners' regulatory regimes. The adoption of an efficient regulatory regime, either a technical regulation or a voluntary standard, could lead to reduced production and transaction costs. Production costs can be reduced through improved internal production processes. Transaction costs can be reduced through fewer audits or acceptance as an approved supplier. Failure to adopt an efficient regime could result not only in increased production and transaction costs, but also in the denial of market access due to an inadequate regulatory regime.

CONCLUSIONS AND AREAS OF FUTURE RESEARCH

Recent high profile food safety-related incidents such as the 1996 British BSE (bovine spongiform encephalopathy) scare and the 1996 Japanese *E. Coli* outbreak indicate that food safety is a concern for consumers, producers and governments alike. However, countries tend to react differently to food safety concerns and adopt different food safety policies. This can lead to the adoption of national technical regulations and voluntary standards whose targets are primarily the food safety attribute. Failure to adequately address food safety can result in fatal foodborne illnesses, liability suits, and/or economic losses.

When national regulatory regimes do not apply regulations evenly for domestic and imported goods, or when they are not accepted by other countries, trade impacts can arise. That food safety and SPS measures are important international issues in the food sector is indisputable. How countries and their trading partners choose to address food safety is of critical importance if they wish to remain competitive in the domestic and international market. If rapprochement is to occur, how can trading partners' differing food safety strategies coexist? Can their differences be narrowed? Will nations move toward coordination and mutual recognition?

Nations need not be reactionary toward the food safety challenges in the food sector. GATT and NAFTA allow nations to set appropriate national levels of protection for sanitary and phytosanitary reasons. The goal of the respective agreements is to foster equivalent, though not necessarily identical, SPS measures among members. Some coordination attempts have already begun between the United States and Canada. For example, some U.S. and Canadian agencies have begun to share and exchange food safety-related information. The U.S. and Canadian food inspection agencies share information to prevent unsafe food, particularly meat and poultry, from entering either country. Similarly, the regional offices of the Canadian Fisheries and Oceans Canada and the U.S. FDA share information, as do Health Canada and FDA. Clearly, some coordination attempts are already functioning. It remains to be seen what other food safety-related measures the trading partners will adopt.

Current understanding of SPS measures in trade agreements could be enhanced by undertaking further research into the issue. Information could be gleaned from case studies on technical barriers, comparative studies on national food safety regulations, or additional studies on voluntary standards adopted for food safety reasons. As global food trade continues to consist of an increasing quantity of further processed food products, food safety-related research will likely become increasingly needed.

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