# What's the Beef with Food standards? Industrial Meat and the Politics of International Trade

First Draft

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**Introduction**

This paper examines the development and diffusion of food standards globally a key part of the drive to harmonize national regulations in the name of facilitating international trade. Despite the efforts of powerful actors and interests in the global food system to develop global standards and more uniform regulatory practices the development of some standards is fraught with conflict. Even when adopted internationally resistance to the standard develops and diffusion is, thus very uneven. This paper uses case studies of international standard setting at the Codex Alimentarius for livestock food production (meat and dairy) to examine the development of standards and resistance to them. It examines in particular conflict over the establishment of safe maximum residue limits (MRLs) of hormones and veterinary drugs used in the production of pork, beef and milk at the Codex Alimentarius, the main international body developing international food standards and promoting the harmonization of national standards. The paper identifies the key actors seeking to influence these standards and why some standards have been the subject of much contention and conflict at the Codex and figured in trade disputes at the World Trade Organization (WTO).

I begin with a brief discussion of why we might expect to see the diffusion of food standards especially in the area of meat and dairy products and why their development at the Codex has been so full of conflict and their adoption at the national level uneven.
The expansion of the trade in, and the consumption of, meat in the past three decades has been remarkable. In developing countries in particular between 1980 and 2004, meat production tripled and per capita consumption doubled as incomes rose especially in Asia. Production however is concentrated in a few developing countries such as Brazil and China and large developed country producers such as the United States which are major exporters and importers. Over time the processes of production have also changed, innovation, the application of technology and the early move in the United States to what the Pew Foundation calls industrial farm animal production (IFAP) have been key. This system of production:

> encompasses all aspects of breeding, feeding, raising, and processing animals or their products for human consumption. Producers rely on high-throughput production to grow thousands of animals of one species (often only a few breeds of that species and only one genotype within the breed) and for one purpose (such as pigs, layer hens, broiler chickens, turkeys, beef, or dairy cattle).(Pew Commission *page number*)

This form of production, increasingly dominated by large corporate actors, led to increases in productivity, and in North America historically declining prices for meat and increased consumption. As a production form it has spread globally to other regions often through corporate investment as part of the process of globalization and neo-liberalism. Given the global scale and high levels of production major producers have sought to ensure export market access for their product. The development of international trade rules in bilateral, regional and multilateral agreements have sought to limit regulations that would hamper market access. At the same time national regulators seek to ensure food safety and protect food eaters from harm or deception. As more food is produced via this model and food eaters are increasingly distant

from the sites of production they are more reliant on regulators. As regulations and standards around food have proliferated so have efforts to harmonize them thus limiting their negative impact on food trade and market access.

The World Trade Organization (WTO) when it was created out of the final agreement of members of the General Agreement on Tariffs and Trade included two agreements that addressed the issue of national regulation of food and other products. The agreements on Sanitary and Phytosanitary (SPS) measures and Technical Barriers to Trade (TBT) cover most aspects of regulations that relate to food. SPS measures are any that deal with food safety while TBT measures include any state regulations adopted to deal with consumer safety, health or environmental protection, including product labeling. In keeping with trade liberalization obligations WTO members, while their right to regulate is recognized, are obligated to notify other members of any new or changed regulations, avoid discrimination against foreign products or those of a single country, employ the least trade restrictive regulations possible and, in the case of food safety, base or justify regulations only on scientific grounds and, where available, relevant international standards. The standards of an existing body, the Codex Alimentarius, are referenced in the SPS and for both agreements have served as a benchmark. The Codex standards then can be used as a justification to the WTO for national measures to protect food safety or require particular forms of labeling. This has given much more weight to Codex standards which historically had been seen more as guidelines relying on their voluntary adoption by member states. While adoption is still voluntary the deviation from Codex standards, particularly in the direction of ones that are more restrictive than the Codex could mean a trade dispute and, in the event of a loss at the WTO, costly trade retaliation which might be especially damaging for smaller export-dependent economies. The coercive aspect of trade dispute threats creates a strong incentive for smaller countries to adopt Codex standards. It has also created great incentives for powerful food exporting countries and their allied industries to seek to shape Codex standards in a way that advances their trade interests (Veggeland and Borland).

**Codex and the Development of Food Standards**

A joint body of the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) the Codex was founded in 1963 with a mandate to develop and harmonize food standards both "protecting the health of consumers and ensuring fair practices in the food trade" (WHO, 2005, 14) Much of the work of the Codex is carried out by member state delegates serving on committees whose work on standards is eventually forwarded to the full Codex Commission which meets annually and gives final approval to the adoption of standards. There are several types of Codex committees dealing with for example, functional (or cross commodity) issues (such as general principles, labeling, limits on pesticide or drug residues) committees based on commodities (such as milk and milk products or meat) and committees covering members in a geographic region. Each committee has a chair, and the chair's country will host the Codex committee's work and meetings, that is, fund the secretariat and pay the costs of annual committee meetings. Country's with strong interests in various aspects of food production and trade thus have the incentive to host and chair meetings. Canada has chaired and hosted the food labeling committee's work for many years while the United States has chaired and hosted the Codex Committee on Residues of Veterinary Drugs in Food (CCRVDF). Decisions of the Codex committees and the Commission are normally made by consensus

although the rules of procedure do allow for voting The European Union also attends Codex and depending on the issue and what the division of competence is between the 27 individual members and the Community they may speak with one or several voices on an issue. Their votes, if necessary, are counted however as individual members.

Despite its membership of 186 countries the reality is that the work of the Codex is dominated by key actors who have a material interest in food standards and the resources and technical expertise to dominate the process, especially at the committee level. Historically developed countries especially what Oxfam calls the food superpowers (Oxfam, 2011) including the United State and the European Union have dominated the work of Codex in many cases in cooperation with smaller similar countries with an interest in food exports. The US, for example, is part of the Quad group which also includes Canada, Australia and New Zealand, all major Northern food exporters. Their delegates maintain contact and meet prior to Codex meetings to informally coordinate their position on issues. However, more recently important food producers in South America like Brazil and Argentina are playing a role along with some larger Asian countries. In many debates over food standards at the Codex patterns are evident where, for example, the food producing states of South America side with the United States and the Quad countries while countries dependent on EU market access will often side with or support the EU as will Norway and Switzerland.

The development of new food standards at the Codex follows an 8 step process. It begins with agreement on a proposal to develop a standard or engage in what members call new work. Such work normally originates in a committee and is often led by a member country which forms a working group of other concerned or interested members. This group will often work together electronically with perhaps a final face to face meeting on the eve of the committee's formal face to face meeting. Once the Codex Commission has agreed on new work a draft standard may be developed and negotiated at the committee level with areas of disagreement bracketed, discussed and debated and negotiated until consensus can be reached. The draft is circulated to member governments for comment and may be revised. The final 8$^{th}$ stage is where the standard may ultimately be adopted by the Commission. As we will see below however, that adoption is in no way automatic. Given the increasing complexity of industrial food production and new technologies, the proliferation of regulations, the politicization of Codex standards mentioned above, and the very small size of the Codex secretariat in Rome, the process of developing a standard can take many years.

Given the number of committees and meetings and the limited resources of some developing countries their participation at committees may vary widely. The number of national delegates at committees will often be less than half the number at the Commission meetings. The Codex does have a modest trust fund to support the participation of delegates from some of the less developed countries, primarily by subsidizing travel, however their lack of capacity to undertake or participate in Codex work is evident at the meetings. In addition the limited translation into only French and Spanish at many committee meetings and the fact that many working groups operate only in English also means that real effective participation is very uneven in contrast to many larger developed countries and their industry advisors.

Like other organizations in the UN system, the Codex process allows for input from non-states actors, especially food producers and processors, and is much more transparent than the WTO. This openness has provided a direct channel for corporations and food industry organizations to try to influence standards. By 2007 the number of International Non-Governmental Organizations (INGOs –the Codex term) represented at Codex meetings numbered 157. Observers' numbers at Commission and committee meetings have increased even more rapidly than state membership. Moreover national delegations often include industry representatives and other organizations as part of the delegation and may share information or seek their input. Consumer and environmental NGOs, despite limited resources, have also sought to influence standards. Consumers International, a federation of 220 member organizations in 115 countries have used their capacity to access committee and commission meetings to report on, and try to influence the proceedings, either themselves, or as part of national delegations. Their reports on Codex activities are shared with other trans-national coalitions making the work of the Codex more known, along with the efforts of corporate actors such as biotechnology companies, to shape its standards.

In terms of how food standards are developed the scope of risk assessment within the Codex has been restricted to matters related to human health. Given its limited resources, the Codex relies heavily on independent experts for scientific advice on risks to human health from, for example, pesticide residues, food additives, or drugs or hormones used to promote animal growth. The development of standards based solely on "sound science" is not however, the reality of the Codex. Even assuming scientists are all in agreement, that the data are available and definitive (not always the case) there is still a role for public regulators and decision-makers regarding how risk once it has been assessed is to be managed. It is here that differences among national regulations arise. While this difference is often summarized in terms, for example, of European precautionary based regulation and US science, or risk-based regulation, it is more complex and has imbedded within it material interests of actors. It often also reflects specific social, cultural or other pressures that decision-makers and even food distributors and retailers may face within a particular market. The following section briefly discusses the role of scientific advice in the Codex process.

**Sound Science, Whose science and "other legitimate factors"**

According to the Codex website, its standards are based on the "best available science assisted by independent international risk assessment bodies or ad-hoc consultations organized by the FAO and WHO. One of the most important of three established bodies is the Joint FAO/WHO Expert Committee on Food Additives (JECFA) which Codex describes as:

> an international expert scientific committee administered jointly by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO). JECFA serves as an independent scientific committee which performs risk assessments and provides advice to FAO, WHO and the member countries of both organizations. **(**http://www.codexalimentarius.org/)

Initially, the committee concentrated its work on evaluating the safety of food additives, now it also includes the evaluation of processing aids, contaminants, naturally occurring toxins and residues of veterinary drugs in food. It also develops principles and identifies appropriate

analytical methods to guide its work. Members are drawn from a roster of 39 scientists who are appointed for a five year period. Experts in areas dealing with chemicals are nominated by FAO while WHO nominates those dealing with issues related to veterinary drug residue and human health risks. The desire for regional and gender and balance are also reflected in the roster. The work of JECFA is demand driven usually responding to requests for advice that come from the Codex. The FAO and WHO bear the costs of JECFA members' attendance at meetings.

The workload JECFA is a reflection of the industrial system of food production. especially as it relates to animals. The website notes that since its creation in 1956 JECFA "has evaluated more than 2,500 food additives, approximately 40 contaminants and naturally occurring toxicants, and residues of approximately 90 veterinary drugs." http://www.fao.org/food/food-safety-quality/scientific-advice/jecfa/en/. The pace and number of additives and drugs has been increasingly in recent decades.

The changing role of food standards in relation to trade which the negotiations of the SPS and TBT agreements would bring was recognized by Codex in the early 1990s. It saw the need to adopt and clarify procedures and practices for developing standards including specifying the role of scientific advice. A 1994 paper regarding the role of science in Codex decision-making generated lengthy debate among delegates (Jukes) and four principles on the role of science were adopted in 1995, modified in 2001 and are contained in the appendix of the procedural manual. (Codex, 2013, 205) Entitled Statements of Principles Concerning the Role of Science in the Codex Decision-Making Process and the Extent to which other Factors are taken into Account it reiterates the commitment that Codex standards, guidelines and recommendations shall be based on the principle of sound scientific analysis and evidence, involving a thorough review of all relevant information. However:

> 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. (Codex 2013, 205)

The manual then tries to set out some limits on "these other legitimate factors" and how they are reflected in risk management, including that they are clearly documented, have a rationale provided and avoid creating unjustified trade barriers. Despite attempts to clarify their scope these other legitimate factors have been the subject of disputes within the Codex Committee on General Principles. Where scientific uncertainty exists or social factors intervene, such as consumer or environmental concerns, national regulations have differed and made consensus on Codex standards difficult. These differences have formed the basis of trade disputes, as in the case of hormones in beef.

In particular there are two committees where these other factors and the spread of the industrial model of food production have led to controversy, prolonged conflict and great difficulty in coming to agreement on standards. One is the Codex Committee on flood labeling where efforts to develop a standard around mandatory labelling of "Foods and Food Ingredients Obtained through Certain Techniques of Genetic Modification / Genetic Engineering"

initiated in 1991 faced fierce US and allied GM crop producing countries' opposition. The battle finally ended in 2011 with a set of guidelines that essentially avoid creating a standard and allowed for varied national approaches on GE food labeling. While this case cannot be discussed in detail here (see Smythe 2009 and 2013) it reflects the extent to which US governments and their policies and regulations on GE food are driven by industry influence, and the perceived importance of biotechnology to US trade interests (Food and Water Watch, 2013). In this however the US is not unique. Countering the US push however were the European Union, a number of allied countries and consumer and environmental groups. "Other legitimate factors" figured prominently in arguments for mandatory labeling. Similarly the Codex Committee on Residues of Veterinary Drugs in Foods (CCRVDF) has faced several divisive issues as they relate to the industrial farm animal production model.

**CCRVDF, Industrial food and Residues in Milk and Meat**

By the mid1980s it was becoming clear that the workload and capacity of existing Codex functional committees on food additives and pesticide residues and commodity committees like that for meat would not be able to address the issues around the growing use of growth promoters and veterinary drugs in meat and milk production. A number of countries such as Australia noted the need

> evaluate chemicals used for the mass medication of food producing animals. It had been pointed out that these substances could leave residues in meat and meat products, milk and eggs which gave rise to problems in a very extensive area of international trade (Codex 1986)

Accepting the recommendations of an expert consultant's report and noting that the issue was "urgent and timely" the Commission agreed to establish the CCRVD in 1986 when it held its first session. Terms of reference of the CCVRD are:

> (a) to determine priorities for the consideration of residues of veterinary drugs in foods;
> (b) to recommend maximum levels of such substances;
> (c) to develop codes of practice as may be required; and,
> (d) to consider methods of sampling and analysis for the determination of veterinary drug residues in foods.

The emphasis on national regulations and the risk to trade was made clear in the opening address of the US chairman of the committee.

> Differences among nations in the use and regulation of various animal drugs and hormones present troubling implications for world trade. As the Commission has recognized, the use of increasingly more sensitive methods of analysis can inhibit trade to those countries that needlessly impose a "zero" tolerance for certain residues. Unfortunately, advances in science can be used punitively - as technical barriers to trade.

> Perhaps if this Committee had been formed five years ago, my country - and potentially yours would not be faced with resolving the trade difficulties now before us. (Codex, 1987, 35)

He also noted that residues of veterinary drugs in food were a concern to consumers but that many consumers are "uninformed" and had their confidence shaken by cases such as DES. The early tasks of the committee included defining terms, identifying the key issues for which scientific advice is needed so that ultimately the committee could agree on Maximum Residue Levels (MRL's) for drugs of public health and trade significance. The list of drugs to be assessed was based on submissions of members and the most common drugs identified in their respective submissions. Almost from the outset however certain substances generated controversy. One of these was BST. The technical name is Bovine somatotropin **(**abbreviated often as bST or BST**)** which is a bovine growth hormone. Naturally occurring in cattle it plays a role in animal growth and development. Monsanto was the first to develop the technology to synthesize the hormone using recombinant DNA technology to create recombinant bovine growth hormone (rBGH)**.** It patented the product an injectable hormone that increases milk production in cows. Its approval in the US was itself controversial and raised issues about the regulator's reliance on data provided by Monsanto and their influence over, and connections to regulators and questions of conflict of interest.(Hauter, 2012). Nonetheless the United States had in 1990 requested the inclusion of these substances on the priority list for evaluation by JECFA with a view to creating a standard for the MRL down the road. In 1994 the FDA approved the commercial product Posilac, a brand ultimately sold by Monsanto to Elanco Animal Health (2008). The FDA in 1994 also prohibited dairies from using the label rBGH free- based on Monsanto's argument that the milk produced with or without the hormone was in no significant way different. Despite those efforts the use of the hormone in US milk production has been declining in the past decade and is used by a minority of dairy producers. This is largely because of various campaigns against its use and the pressures on food retailers and chains like Starbucks who have moved to ensure their dairy products and milk are rBGH free.

The fate of BST at the Codex has been equally troubled although the United States continues to push for the final adoption of the standard which has been stuck at the eighth step of the Codex process since 1999. The story of BST is very reflective of a number of issues raised above. The JECFA evaluated BST in 1992 and again in 1998 and addressed a number of concerns about it including the development of mastitis in cows as a result of its use and the resulting increased use of antibiotics. JECFA concluded that BST "can be used without appreciable health risk to consumers" (Codex, 2012). Though there was vigorous discussion at the 1998 CCRVDF meeting and the Chair was forced to admit there was no consensus because there was no scientific objections to the MRL he advanced it to step 8 and the Codex Committee on General Principles (CCGP) was tasked with sorting out the role of "other legitimate factors" in the case of BST and whether they could be applied in a decision about a standard. Because the EU was still in the process of developing regulations in the wake of the BSE and other issues it had not opposed the advancement of the standard though, given milk surpluses in the EU there was little interest in technologies further increasing production. The CCGP was also deadlocked on the question of other legitimate factors that might affect the adoption of a standard and after extensive discussion in 1998 and 1999 it too had to report no consensus on the issue of whether other legitimate factors should be applied.

The BST standard languished at stage 8 and raised concerns about the work of the Codex and its standard setting process. Pressure from some delegates to address the issue resulted in the Commission in 2011 asking the secretariat to prepare a report on the history of the issue with a view to bringing it forward as an agenda item at the Codex meeting in Rome in 2012. In the meantime the approval of BST at the national level had not been diffusing in a way that Monsanto or the United States government might have wished. For example, in 1999 Canada, a close US Codex ally on issue of biotechnology did not approve the use of BST in milk production based on animal safety concerns and revelations regarding Monsanto's efforts to pressure regulators and scientists. Many other important Codex members followed suit. The European Union issued a permanent ban in 2000. Australia, New Zealand and Japan did as well. The minority of 21 countries approving BST include a number of South American countries.

Once more the Codex Commission debated the issue of BST in 2012. Again delegates were divided some wishing to advance the standard, some wanting to discontinue work on it and some wishing to continue to hold it at stage 8. Once again those opposing adoption of the standard raised questions about animal health and welfare and the potential human impact that increased use of antibiotics on the animals could pose if it lead to antimicrobial resistance. They insisted that these factors should be taken into account in risk management decisions. Some delegates also raised the issue of whether assessments based on 1997 data were still relevant and whether there was new information available. Others such as the United States argued that failing to advance the standard, given the scientific advice, would undermine the credibility of the Codex and the goal of harmonizing national standards. Even Canada made the case that Codex decisions must be based only on "sound science" and even though it has not approved BST for use in milk production it did indicate approval of adopting the standard.

Unable once again to find consensus but seeking to remain true to the Codex desire to base standards on scientific advice related to human health the Commission chair proposed a compromise that was ultimately adopted which would mandate JECFA to once again review relevant and current information with a view to assessing "the impact on human health and the potential for antimicrobial resistance."(Codex 2012).

***Ractopamine, Meat and Victory for Industrial Meat?***

A second controversial and difficult issue for both the CCRVDF and the Commission was in relation to the use of drugs in growth promotion in animals. In this case the drug in question was ractopamine, more properly ractopamine hydrochloride used both in the production of beef and pork in North America and the 24 other countries which have approved its use. The drug is what is called a beta agonist. Its effect is to speed up the heart rate of the animal and produce heavier leaner more muscled animals which are more profitable to producers and lower fat. It is used in industrial meat production of pork and beef in the context of confined feeding operations. Produced by Elanco Animal a division of the Eli Lilly drug company it is mixed into feed under the brand name Paylean for pork and to be effective must be fed to animals right up until very shortly before slaughter. The result of which is that a small amount of drug residue remains in the meat.

Like the case of BST the desire to establish a Maximum Residue Level considered to be safe is seen by those countries and companies using ractopamine in their production to be critical to ensuring market access for their meat exports to important markets in Europe and China. An MRL, while not guaranteeing access to markets in countries where use of the drug is not approved, would allow for the potential for WTO sanctioned trade retaliation if those with more restrictive limits on the residue barred imports and were found at the WTO to be in violation of the SPS agreement and Codex standards. Thus for the United States establishing an MRL was a priority.

Once again though the use of the drug, even in the US itself, has met controversy. Even though approved by the US FDA in 1999 questions arose over the data on the drug and whether some data on impact on pigs in 2002 had not been declared to the FDA. Concerns also began to emerge over two aspects of the drug's impact. The first was on the animals themselves and the extent to which the drug brings on stress type effects, aggression and other impacts that may be harmful to animal welfare. The second issues was related to the science of risk assessment and incomplete or competing assessments. Finally this case also raised the "other legitimate factor questions once more" In this case however, in contrast to the BST decisions at the Codex a dramatic confrontation and a rare secret ballot vote in Rome in July 2012 did result in the adoption of the MRL, however that standard has faced strong resistance and has not afforded the market access desired by pork producers and processors in terms of exports.

Work on ractopamine had been initiated once again within CCRVDF and advanced as a result of a JECFA reviews in 2004 and 2006. However the process was stalled once again in subsequent years as questions were raised about both the adequacy of the scientific risk assessment and other factors that need to be taken into account. Further progress was hampered in the first instance by a Review by the European Food Safety Authority in 2009 which raised questions about the adequacy of the JECFA review on the human impact because of the limited data. In addition the Chinese raised concerns about the adequacy of the testing and sampling done by JECFA as it related to particular parts of the animal. China claimed in 2009 that higher levels of residue were found in kidney, liver and muscle tissue, and other tissue eaten more frequently by Chinese consumers.

The proposed MRL then remained stalled for another three years. After a vote to not adopt the MRL in 2011 the Commission became increasingly concerned about the situation of standards like the BST and Ractopamine being kept in a sort of limbo at stage 8. The Commission's Executive Committee proposed that the Chair of Codex undertake a number of efforts to end the impasse and build consensus toward a decision. The Codex procedural manual does lay out procedures and methods to seek consensus in the process of decision-making on Codex standards. These include informal meetings one of which the Chair held in conjunction with the Codex Committee on General Principles meeting in Paris. Once again there was a failure to reach a consensus with the chair identifying key issues which included:

> *divergence in the opinion on scientific assessment, the manner of considering consumer preferences as part of factors influencing Codex standards, and on the fulfilment of all Codex requirements to support adoption of the draft MRLs."* (Codex 2012)

Further efforts to develop consensus he noted had failed and when the floor was open for discussion

division was once again evident over the adequacy of the risk assessment, the role of other factors and how a failure to move the MRL forward might harm the credibility of the Codex. Claiming that all efforts to find consensus (this too was disputed) Ghana called for a roll call vote. The extent of remaining division led the Chair to call for a vote on whether or not to vote on the issue. This was followed by a vote on how to vote ie by secret ballot. In each case the EU cast a vote on behalf of the 27 members. The final vote on whether to adopt the MRL was a narrow victory for the US and the pro ractopamine camp which received 69 to 67 votes. The response however of the EU was clear that it would not alter its legislation and they would not adopt the Codex standard. China also made its opposition clear as did Russia and a number of other members. Given the EU and China and account for 70 per cent of world pork consumption there would be a trade impact. While there is potentially leverage in threatening to launch a trade dispute to achieve market access the reality is that given the slowness of that process and the reliance of the pork industry in particular on important rapidly growing markets such as China led to a rather different outcome.

Ractopamine residue had been a sensitive bilateral issue. Taiwan had banned US exports of beef with residue until US bilateral pressure over a trade deal led Taiwan to change its law in 2012, the public response however were massive riots, demonstrations and piles of burning beef. The response of Russian and Chinese regulators was also one of banning meat produced using ractopamine. China, the world's largest pork consumer and "the third largest market for U.S. pork with sales of over $800 million last year, wants pork from the United States to be verified by a third party from March 1 2013 (Botemiller). Canada has faced similar demands. The response however was not necessarily one of heading to Geneva although both the United States Trade Representative Ron Kirk and the Canadian Minister threatened to do that. Rather in the case of Brazil, where ractopamine had been approved and used, the response was to ban its use in Brazil to ensure continued export market access. In fact much as had happened with hormones in beef both the United States and Canada began processes for bilateral agreements and certification of ractopamine free meat and meat processing facilities for access to the Russian market. A major US processor of pork Smithfields began a similar development of dual track meat production to meet the demands of the Chinese market *(Chicago Tribune*) despite having claimed a few months earlier that ractopamine was "safe and effective FDA feed supplement that has been widely used in the hog-farming industry for years."

**Conclusion**

As our two cases indicate the development and diffusion of international standards in relation to food is a process that has despite the desire to harmonize regulations to facilitate trade become increasingly politicized since these standards have become an important aspect of advancing the interests of actors in the global food system. As a result the process of developing standards has become slow and fractious as more and more standards and regulations proliferate to deal with the various aspects of the industrial model of food production.

Standards and their development and diffusion are not simply technical questions about risk assessment and the Codex has been challenged in its claim that standards must be based only on a science-based risk assessment and narrowly defined criteria of safety to human health. Consumers are pressuring governments and the food system to address other issues. Other

legitimate factors have been a subject of much debate and will not go away. In particular animal welfare continues to raise concerns especially in the industrial model of farm animal food production. As Appely has pointed out there is no one at the helm creating global standards that address the issue. The OIE or World Organization for Animal Health, another standard setting body referenced in WTO agreements, only deals with issues related to disease. Yet many groups are concerned and have put pressure on governments to address these issues. One place they have done that is the Codex as the cases of both BST and ractopamine indicate.

These cases also reflect the way in which industry and its allies will continue to seek standards for levels and usage of many other drugs and growth promoters that are part and parcel of the industrial food model. One the one hand some critics claim the long fractious process to set standards undermines the Codex and the development of harmonized standards. Others argue, however, that if the Codex embraces standards that many consumers find unacceptable and many government regulators do not adapt or reject that will also undermine the Codex role. Even more concerning for some was the revelation at the Codex Commission in 2012 of the limited capacity for the organizations to fund the ever growing demands for scientific risk assessment of the plethora of drugs and other agents being used in the industrial model. The lack of adequate resources opens the door to private sector, corporate funding of such assessments which could undermine the whole integrity of the standard setting process. A situation that,one could argue, would only lead to more resistance on the part of those who, in the name of animal welfare, environmental sustainability, or other important values reject the industrial model.

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