



## Zero tolerance rules in food safety and quality



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### ABSTRACT

In this introduction to the special section on zero tolerance rules, we identify examples from the known literature, which focus almost exclusively on deviant behavior. In contrast, we assembled papers that focus on zero tolerance as a characteristic of an increasing number of public and private rules that govern and shape the agrifood system. The contributions to this section illustrate the importance of an interdisciplinary approach for the conceptualization and exploration of zero tolerance rules, as well as an examination of the impact of zero on a range of value chain stakeholders including consumers. A thread running through the articles is that a society's culture, and the political economy in which it is embedded, matter. Moreover, the authors show that the meaning of "zero" is ambiguous and application of "zero" is problematic at best. Perhaps most important is the argument that absolute safety is simply an illusion.

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*Zero-tolerance n. orig. U.S. resolute opposition or resistance to anti-social (esp. criminal) behavior, typically by strict and uncompromising application of the law; a stated policy of this kind, designed to eliminate unacceptable conduct, esp. of a specified kind.*

[Oxford English Dictionary (2013)]

### 1. The contours of zero

Questions about the use of "zero tolerance" rules have been taken up most prominently in the context of deviance. "Deviance" is a construct used to describe behavior that violates a cultural rule. Most of the work on deviance is about sex, drugs and violence, but not food. Eliminating deviance in schools, particularly violence, drugs and crime, is one of the most common uses of this approach (Borum et al., 2010; McNeal and Dunbar, 2010; Sullivan et al., 2010). Zero tolerance rules have also been instituted to control violence against health care workers (Gabe and Elston, 2008), guide policing (Bowling, 1999), prevent corruption (Sakya et al., 2010), constrain sex workers (Hubbard, 2004), discipline welfare recipi-

ents (Herd et al., 2005), eradicate female circumcision (Newland, 2006), eliminate sexual exploitation (Simic, 2009), and prevent discrimination and harassment on the basis of race (Bass, 2001; Tamale, 1996), gender, and sexual orientation (Basham, 2009).

Scholars have examined the practice and impacts of zero tolerance policies on social class, race, ethnicity, and gender (Caton, 2012; Portillos et al., 2012; Verdugo, 2002; Welch and Payne, 2010); and across the juvenile justice system more broadly (Merlo and Benekos, 2010). Investigators have also examined parental roles and attitudes toward alcohol usage among children and young adults (Abar et al., 2012; McMorris et al., 2011); in the shifting opinions among students toward doping in elite sports (Vangr-underbeek and Tolleneer, 2011); and in the internationalization and diffusion of the US approach to crime and punishment and the subsequent impacts of adoption in other jurisdictions (Belli, 2000; Hoigard, 2011; Jones et al., 2008; McCormack, 1999; Newburn, 2010; Wacquant, 2012). Most striking is the struggle to define, implement (Innes, 1999; Ismaili, 2003) and measure the effectiveness (Peterson et al., 2001) of zero tolerance rules.

In this special section of Food Policy we focus on zero tolerance as a characteristic of policies, statutes and regulations including the wide range of associated grades and standards that govern and shape the agriculture and food (agrifood) system. Of interest to us are both the public and private rules that impose a "zero" standard for substances such as residues and pathogens, blemishes and other imperfections, genetically modified organisms (GMOs), and other food constituents such as gluten and trans fats (see Liaukonyte et al., 2013 for a discussion of the labeling of these issues). This interest also includes the public and private rules that

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guide agrifood production, processing, and handling practices. An important area for consideration is the origin of these zero tolerance rules. Moreover, this special section considers these rules from the perspective of a range of value chain stakeholders including consumers.

For instance, in our own work on gluten we found anecdotal evidence suggesting that consumers believe and expect that products labeled “free” from a substance will not contain any amount of that substance (Worosz and Wilson, 2012). Gluten is a protein from wheat and similar grains. It is a food constituent that persons with celiac disease must avoid for medical reasons, but many other consumers choose a “gluten-free” diet and products for a range of reasons beyond control of celiac disease. While consumers, particularly those with celiac disease, expect products labeled “gluten-free” will not contain any gluten, this is not necessarily the case. For example, the standard from Codex Alimentarius (2008) and the new US Food and Drug Administration (FDA) standard (21 CFR Part 101) set “gluten-free” at 20 ppm (ppm).

Specialists such as food scientists and regulators struggle with the meaning of “zero,” as well. These actors establish the criteria for measurement tools and the interpretation of results to determine the existence of a substance (McCabe, 2010). For example, Tran et al. (2012) illustrate the trade effects of improving the analytical techniques for measuring smaller and smaller amounts of chloramphenicol (an antibiotic). The improved analytical techniques, a “chasing after zero”, caused a reduction in exports of crustaceans from Asian markets to the US, the EU and Japan (see also Tran et al., forthcoming; Tran et al., 2013).

Meanwhile, inspectors who are charged with verifying that the tools are measuring what they are intended to measure, and the results are interpreted accordingly, grapple with both the meaning and application of “zero”. For instance, in a recent issue of a trade magazine, a food safety consultant likened the US Department of Agriculture’s rules on *Escherichia coli* (*E. coli*) contamination of red meat to Sisyphus’ plight (i.e., the king of Greek mythology who was charged with continuously rolling a boulder up a hill). The standard requires inspectors to search for, and to find, all traces of fecal, ingesta, and milk matter on the surfaces, and within the flaps and crevices, of carcasses or carcass parts that are moving rapidly along a disassembly line. Sayer (2013) suggests that even under the best of circumstances and/or most careful eye this task is impossible. He indicates that the rule was created in a vacuum stating that we live in a “flawed world with imperfect people and machinery.”

## 2. Contours of the special section

The intersection of key value chain stakeholders, consumers, policy-makers, and scientists suggests an interdisciplinary approach to the conceptualization and exploration of zero tolerance rules. Therefore, this special section spans several disciplines. We brought together authors from anthropology, economics, environmental studies, geography, public policy, and sociology. The diverse disciplines support a range of theoretical approaches and empirical methods, including specific case studies, to explore “zero”. Our intent is to advance the understanding of zero tolerance rules, to identify the consequences of such rules, and to provide insights into the future and potential impacts of associated policies and goals.

While these authors touch on a wide variety of issues, a thread that emerged from the collection of articles is that a society’s culture, and the political economy in which it is embedded, matter. In other words, context influences the desire and expectation for; as well as the development, acceptance, use and implementation of; zero tolerance rules and the consequences thereof.

### 2.1. Culture matters

The articles in this special section illustrate several, albeit not all ways, that culture matters when thinking about and discussing zero tolerance standards. The authors show that cultural context influences a group or individual’s conceptualization of an agrifood entity, their understandings and expectations of zero as it is applied to that entity, and the use and implementation of zero tolerance rules in governing said entity.

Serrano cheese in Brazil and rice in Japan are examples of “traditional” foods with deep cultural and historical significance. The former is susceptible to the growth of pathogenic bacteria because the milk is not pasteurized and the cheese is soft (i.e., aged less than 60 days). Nevertheless, as da Cruz and Menasche (2014) illustrate, Serrano cheese is produced in a long-established and culturally accepted fashion, which obviates producers’ and consumers’ desires for regulatory intervention. Mulvaney and Krupnik (2014) explore the role of “nature” in the spread of GMO rice finding that culture influences notions of purity, and by extension, acceptance of risk. Japan, a major consumer of rice, favors the precautionary principle as a means of not only protecting their market, but also the inherent quality of GM-free rice. US growers responded by collaborating to develop a system of public and private rules to prevent cross-contamination; and to develop a system of testing and monitoring to certify that its rice met Japan’s “zero” tolerance rule.

Measuring and setting risk protection levels are cultural decisions as they are based on societal values and choices. However, as Matsuo and Yoshikura (2014) illustrate, within a particular society, these values and choices are not necessarily uniform. Risk assessors and associated regulators tend to have attitudes, beliefs, and norms that are rooted in the culture of science, which is somewhat different, and at times in opposition to, consumers’ broader food culture. Thus, communication about the concept of zero, how zero is measured, and why zero is an illusion can be a thorny undertaking.

Producer culture may also diverge from that of the risk and regulatory communities. Hatanaka (2014) case of shrimp farming in Indonesia provides one such example (see also da Cruz and Menasche (2014) case of raw milk cheese). Meeting the international certification standards for organic shrimp requires the adoption of particular practices and consent to third-party audits. This production and oversight system is embedded in Western notions of science and bureaucracy, notions that have little cultural relevance to small-scale farmers who, in the course of business, rely on traditional practices, indigenous knowledge and trust-based assurance (cf., Mulvaney and Krupnik (2014) on US rice growers).

Kalaitzandonakes et al. (2014) focus on international trade disruptions from regulatory asynchronicity. Individual state policies stem, at least in part, from a society’s cultural beliefs about, and the ways in which it values, food and agriculture, regulatory harmonization, and governance more broadly (see Matsuo and Yoshikura, 2014). Culture also structures expectations for who ought to be responsible for assuring purity and safety. In the case of China, Scott et al. (2014) found that the state developed an incremental, yet rigorous certification scheme with the goal of achieving zero ecological impact and zero food safety risk. A string of noteworthy scandals and scares prompted many Chinese consumers to expect food safety problems to persist. Consequently, some of these consumers have chosen to pursue personal trust-based relationships with producers. In contrast, Yamaguchi (2014) piece delivers a cautionary tale of endorsing zero tolerance. Japanese state officials and other experts had long promoted the purity and safety of the food supply. However, the strength of the messaging, when combined with social norms, created a powerful and

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