Statement of Reginald L. Brown, Executive Vice President, Florida Tomato Exchange and Manager, Florida Tomato Committee
to the U.S. Food and Drug Administration
April 13, 2007, College Park, Maryland

My name is Reggie Brown; I serve as Executive Vice President of the Florida Tomato Exchange and Manager of the Florida Tomato Committee, a grower-shipper association and the Federal Marketing Order for tomatoes in Florida. The fresh tomato industry in Florida is the largest in the United States and supplies 45 to 50% of all tomatoes to American consumers. We have actively responded on several fronts upon receiving the CFSAN 2004 letter to growers, packers and shippers expressing FDA's concerns about fresh lettuce and fresh tomatoes. The Florida Tomato Exchange has worked with other tomato groups throughout North America as a member of North American Tomato Trade Working Group (NATTWG) to address these concerns. Currently we are working with the Food Safety Division of Florida Department of Agriculture and Consumer Services to establish a mandatory state regulation of Food Safety for tomatoes in Florida. These regulations are being drawn from a number of guidelines including, the 1998 *FDA Guide to Minimize Microbial Food Safety Hazards for Fruit & Vegetables*; the 2006 NATTWG: *Commodity Specific Food Safety Guidelines for the Fresh Tomato Supply Chain and others*.

We have actively engaged with FDA, USDA and FDACS to explore dialogues and communications in an effort to establish the most effective science-based regulations to address the risk factors for fresh tomatoes. Addressing this issue in such a manner allows for collaborative efforts to maintain public confidence in the purchase and consumption of fresh tomatoes. The impact of the loss of public confidence is extremely high and will result in injury to all segments of the tomato industry. The main goal must be to prevent food-borne illness.

In addressing the questions asked in your notice:

Issue 1)

Every segment of the supply chain must evaluate their specific risk factors and the necessary policies and procedures to manage them. While the risks are universal, the mitigating processes and procedures must be established with consideration for specific production, packing and distribution systems and geographical areas as they exist throughout the supply chain. Practices that pose significant risk of microbial contamination should be evaluated and mitigation practices established to reduce them. Responsible production, packing and handling procedures based on guidance documents available to the industry result in the vast majority [virtually all] of all tomatoes posing no risk to public health. The focus needs to be on the relatively rare exceptions when microbial contamination occurs. Currently, there are no mandatory programs for microbial testing in place throughout the industry. It is anticipated that the Florida program will be risk based and include those that are appropriate based on realistic risk assessments.

Issue 2)

The establishment of uniform science-based risk evaluations and mitigation processes and procedures throughout the entire supply chain is essential to providing the safest food supply system possible. Nationally mandated and monitored regulation presents the best opportunity for accomplishing the goal of overall risk reduction. Such a program must be developed based on commodity specific systems that implements risk reducing process and procedures that address legitimate food safety concerns. The industry in both Florida and California has begun those efforts to develop functional GAPs and BMPs for tomatoes.

Issue 3)

Tomatoes, due to the unique market structure of repacking and distribution, presents real challenges to the traceback process. Rapid accurate traceback is essential to all interest and should be pursued aggressively. Mandatory traceback capability is the only acceptable solution to this issue. Positive Lot Identification (PLI) throughout the system that minimizes commingling must become the requirement if traceback is to be used to limit injury to the public and to the industry. Rapid use of this tool can begin to provide valuable information on the specific route through which microbial contamination occurs.

Issue 4)

Mandatory compliance to GAPs and BMPs through a national program of regulation and regulatory oversight can significantly enhance the risk reduction provided by these practices. The risk for fresh tomatoes will not go to zero with current technology but significant reductions can be achieved with such an effort. Direct marketing of small quantities of tomatoes poses a very limited risk to public health. Such activities could be carefully exempted from portions of such regulations to avoid unreasonable impacts provided significant circumvention would not be encouraged. After all, it is fundamentally in the interest of all participants in the industry to produce the safest tomatoes possible.

In summary, the Florida tomato industry, along with other tomato groups such as the California Tomato Farmers are proceeding on a path to improve the overall food safety environment for tomatoes. For the record, I would like to add the ten *High Priority Research Needs* from the Tomato Safety Food Safety Research Needs Workshop held in College Park, Maryland, February 21-22, 2007. I appreciate the cooperation and ongoing discussions on tomato food safety with FDA and the opportunity to express our thoughts on these issues.

Tomato Safety Research Needs Workshop
February 21-22, 2007
Wiley Building, College Park, Maryland

High Priority Research Needs

Are there alternate processing technologies (particularly 'dry' processing systems that can be used to reduce either the presence or spread of microbiological contamination?

- Use of dump tanks, flume systems and "wet" packing of tomatoes represent unique challenges in terms of potential cross contamination of both product and the packing environment, potential infiltration of the tomatoes, and the need to maintain careful control of water temperature and antimicrobial levels. Lessons learned from other foods, including other fruits and vegetable, show that reducing the exposure of foods to excess amounts of water can be an effective means of reducing contamination. Additionally, reduced use of water provides a means for reducing concerns associated with water supply and disposal issues. The research is needed to determine if moving to less water-intensive packing procedures for tomatoes is feasible and could lead to reduced risk of contamination.

Are specific seasons, microclimates, or weather events associated with contamination of tomatoes in the field?

- Preliminary epidemiological and field investigations suggest that specific seasonal and microclimate environmental conditions, as well as weather events, can lead to increased risk of contamination of tomatoes with human pathogens. However, these observations have not been verified systematically, nor have the mechanisms by which these factors contribute to susceptibility to contamination been established. Potentially, the identification of such risk factors could lead to practical guidance in terms of harvest procedures, planting location, and post-harvest packing/processing. Such knowledge would be an important determinant in the development and implementation of different intervention strategies.

What vectors and vehicles are important in transmitting pathogens to tomato plants and fruits? What are the mechanisms of pathogen movement?

- A number of potential scenarios have been proposed by which tomatoes become contaminated either in the field or during subsequent harvesting and packing; however, to date the relative importance of these vectors and vehicles have not been established. Without such knowledge, the science-based selection of risk mitigation strategies and intervention sites and technologies is not possible and the industry and FDA are forced to use much less focused and cost effective umbrella approaches to hazard control.

How long can pathogens persist in tomato fields, in plant waste, chemical sprays, etc.?

- Critical to making informed decisions regarding commodity specific good agricultural practices that will lead to improved microbiological safety of

tomatoes is an improved understanding of the microbial ecology of the farm environment. In particular, an improved understanding of survival and persistence in the farm environment is critical to the assessment of a particular farm for risk, the persistence of *Salmonella* in adjacent environmental or animal reservoirs, and the development and timing of on-farm interventions.

Are bodies of water in close proximity to tomato fields significant reservoirs for pathogen contamination of tomatoes? How are the populations of pathogens in the soil and water related?

- A series of initial studies have suggested that water in the primary agricultural environment may be an important source of *Salmonella* for tomatoes. However, these studies have not established the relative importance of the water sources, the effective physical separation distances needed to prevent the transfer of Salmonella from the bodies of water in the environment, and potential means for preventing those transfers. This information is critical for developing potential intervention technologies and the implementation of improved tomato-specific GAPs.

What are the cooling and cold chain requirements (aka temperature management) that are needed to prevent growth of pathogens on tomatoes?

- Past research has clearly identified the potential of tomatoes to support the growth of *Salmonella* in the pulp if the fruit is held at temperatures that support growth. This is particularly true when tomatoes are sliced. However, there is little information available to assess what portion of the microbiological food safety risks associated with tomatoes is attributable to inappropriate temperature management (both too warm and too cold). This information is critical to developing reasonable product pathway risk assessments for tomato and tomato products, the articulation of enhanced GAPs and GMPs, and the development of "secondary barriers to growth" of *Salmonella* in tomato products at increased risk (due to the ability of tomatoes to support the growth of the pathogen).

What proportion of tomato producers have implemented GAPs, and to what extent? What are the barriers to GAPs implementation?

- Reduction in the risk of a food serving as a vehicle for *Salmonella* infections is dependent not only on the identification of effective mitigation strategies but also on the extent to which these strategies are consistently implemented. In the case of tomato production, this reflects the extent to which producers and packers are adhering to recommended GAPs and related GMPs. At this stage, it is difficult to determine whether ongoing tomato outbreaks are due to non-adherence to existing GAPs or whether these GAPs are insufficient to control key risk factors. Determining the adequacy and adherence to GAPs and GMPs, and differentiating between them, is critical to making decisions on future food safety strategies, and the need for more research and more oversight. The ability to measure the adherence to GAPs and GMPs is critical to effective priority setting, risk assessments, education programs, and consumer outreach initiatives. This information can lead to development of more effective interventions.

What is the relative importance of internalization vs. surface contamination of tomatoes in the field?

- The selection of effective post-harvest interventions to reduce *Salmonella* associated with tomatoes and tomato products is dependent on understanding the location of the microorganisms on or in the fruit. Most antimicrobial treatments based on surface application are ineffective for internalized microorganisms. Thus, if contamination is largely limited to the surface of the fruit, surface treatment may be sufficient as an intervention technology. Conversely, extensive internalization will require the development of alternative technologies. This information is needed to determine which interventions are likely to be effective and is thus critical to the direction of future research efforts.

Are there specific microbial serotypes or genotypes associated with tomatoes? Are certain varieties of tomato more likely to carry pathogens?

- Initial studies have suggested that there may be substantial differences in the ability of different *Salmonella* strains to contaminate, survive and growth on tomatoes. The identification of the factors contributing to this differential response will provide information needed for assessing the risk of tomatoes serving as a vehicle for *Salmonella* and possibly lead to targeted interventions strategies.

Are there effective approaches that can be used to inactive internalized or attached pathogens? What interventions will reduce the risk of contamination?

- Current approaches for reducing the presence of *Salmonella* on tomatoes are largely restricted to those capable of reducing the pathogen on the surface of the fruit. Most of these treatments are not effective against internalized *Salmonella* and they are likely to be less effective against the pathogen if embedded in a biofilm.