

## **Cooperative Extension Specialist in Processed Food Safety**

**Developed and proposed by:** This proposal was developed by the Food Systems, Food Waste, and Business Support Program Team in collaboration with the Chair of the Department of Food Science and Technology at UC Davis and UC SAREP. The Program Team identified the justification, focus areas, and impact areas for the position. UC Davis advised on research and extension activities based on the capabilities, network, and historical strengths of their Food Science program.

**Position title:** Processed Food Safety Specialist

**Headquarter location and coverage area:** This position will be headquartered at the Department of Food Science and Technology (FST) at UC Davis and will provide statewide coverage for processed food safety. UC Davis is an ideal location for this Specialist given its food safety research infrastructure, statewide reach, history of food safety and food industry extension, and opportunities to collaborate with food processing experts. There are currently two CE Specialists in the FST department: a Community Food Safety Specialist and a Small-Scale Fruit & Vegetable Processing Specialist. The proposed Processed Food Safety Specialist would complement existing expertise in community food safety and small-scale food processing by addressing critical processed food safety needs for food entrepreneurs, food businesses, home food preservers, and producers of value-added products, particularly underserved micro-, small- and mid-scale operations, not served by another Specialist position. The Specialist would collaborate with the UC Master Food Preserver (MFP) program, the UC Small Farms Network, and UC SAREP's food systems programs to support peer-reviewed process validation for food preservation methods and food safety compliance for a range of processing methods. More broadly, the Specialist would engage in multidisciplinary research and extension with FST's food microbiologists, chemists, engineers, sensory scientists, and consumer behaviorists. Presently, a backup location must be included for position proposals linked to UC Davis. The Department of Microbiology and Environmental Toxicology at UC Santa Cruz has agreed to serve as the backup unit.

**Position overview:** The general disciplinary focus for the Specialist will be microbial, chemical, and physical food safety for processed foods, with emphasis on food produced by micro-, small- and mid-scale entrepreneurs, including Microenterprise Home Kitchen Operators (MEHKOs) and Cottage Food Operators (CFOs), as well as home food preservers. The Specialist will conduct research to identify preventive and intervention measures to enhance food safety for the unique processes, facilities, and equipment that comprise food processing at micro-, small-, and mid-scales, as well as conducting process validation for recipes and food preservation methods. They will translate these data, along with existing best practices, into accessible and actionable guidance resources for producers and local government regulators to improve the effectiveness and efficiency of the permitting and inspection processes.

The necessary qualifications for the position include a PhD in microbiology, food science, engineering or a related field with demonstrated ability to engage in applied science relevant to California food processors and food safety. Familiarity with permitting and inspection processes for retail food businesses, food manufacturers, and in home food businesses (MEHKO, CFO) in particular, is strongly encouraged.

The Specialist will work within the Department of Food Science and Technology at UC Davis. The department will provide full administrative, accounting, facilities, and IT support. The Specialist will be evaluated according to the existing joint merit and promotion procedures developed by ANR and UC Davis.

**Justification:** This was the top ranked Specialist position for the Food Systems, Food Waste, and Business Support Program Team. This position addresses several critical gaps in UC's research and extension capacity, including support for small- and mid-size food producers, including CFOs and MEHKOs, and an overall need for more industry guidance in processed food safety. The UC MFP

program within UC SAREP has identified process validation to create new peer-reviewed recipes for its public education programs in safe food preservation as a major gap. This is particularly important for new and emerging California crops and crops important to diverse cultural communities. As the MFP expands into training for CFOs, this position will be crucial to provide science-based support for small-scale production of value-added projects. As identified by ANR, CFOs and MEHKO are growing rapidly in the state. New entrepreneurs and local governments can be challenged by the spike in permit approval and inspection requests for these novel and varied operations. These stakeholders need evidence-based guidance on best practices to maintain food safety, which will help streamline the regulatory process and benefit consumer confidence in, and safety of, these products. The position would also strengthen workforce development and economic mobility by supporting entrepreneurs and family-run businesses, many from historically underserved communities, as they navigate food safety requirements and build viable food enterprises. By improving food safety and enabling operations for small- and mid-size processors, including MEHKO, which are often run by single entrepreneurs or local families, this Specialist will advance the following ANR Condition Changes and outcomes:

*People:* Increased public engagement and confidence in science. Improved food and nutrition security, food sovereignty, and access to culturally relevant foods. Improved food safety. Enhanced regional-based food supply chains.

*Planet:* Enhanced waste reduction, recovery, and economic reuse.

*Prosperity:* Enhanced food systems and markets. Improved workforce development for individuals, communities, and industry. Enhanced business and community leadership

Over the next 20 years (likely much sooner), this Specialist will enable micro-, small- and mid-scale food producers and local regulators to operate more safely, consistently, and efficiently by providing evidence-based tool to support food safety planning, permitting, and inspections (e.g. Public Health Permit and Processed Food Registration). This directly aligns with ANR's Strategic Vision 2040 goals of "Informing Regulations, Policy, and Compliance" and "Cultivating Thriving People and Communities". Moreover, the Specialist will increase the capacity of California households, food businesses, and facilities to reduce food waste through safe food preservation methods.

**Extension:** The Specialist will primarily serve home, micro-, small-, and mid-sized food processors. This is a diverse population spanning home food preservers and individuals beginning as MEHKO or CFO entrepreneurs in their homes, to established family businesses that utilize co-packers or have their own production facilities, to mid-sized food hubs or aggregators. Additionally, the Specialist will serve the health regulators in local governments responsible for permitting and inspections of these operations. By extension, the Specialist will also serve public health by promoting a safe food supply among home food preservers and micro-, small-, and mid-sized processors. The Specialist's extension activities will involve development of online multimedia support resources (articles, infographics, manuals, and videos) and workshops that communicate the California Retail Food Code to MEHKO and CFO producers, including: guidance for preparing Public Health Permit applications and associated inspections, development of Standard Operating Procedures for food safety, obtaining a Food Safety Manager Certificate, developing a Hazard Analysis Critical Control Point (HACCP) plan, and conducting self-inspections. The Specialist will collaborate with the UC MFP and UC SAREP to develop training and educational materials on safe food preservation. Extension activities geared toward local government health agencies will prepare them to handle the growing number of permitting requests for new micro-, small-, and mid-sized food producers. These will include guidance materials highlighting the food safety issues and best practices for emerging food products and equipment, particularly the evolving recipes, practices, and appliances used by CFOs, MEHKO's, and other processed food entrepreneurs.

**Research:** Emerging food safety challenges are driven by the highly diverse and rapidly changing food product landscape afforded by micro-, small-, and mid-sized food processors. This introduces a

constantly evolving system of food ingredients and processing techniques, which demand assessment of food safety risks. Accordingly, the Specialist will research risk assessment methods for the microbial, chemical, and physical contaminants associated with emerging food products and the unique production methods used by smaller processors. Additionally, the Specialist will develop and validate new evidence-based interventions to address identified risks, such as ingredient sourcing and storage strategies, food and contact surface cleaning methods, novel sanitizers and antimicrobial food-safe materials, thermal and non-thermal methods to maintain microbial food safety, and equipment design to promote cleanability. The Specialist will collaborate closely with the UC MFP to conduct process validation and creation of peer-reviewed food preservation recipes for home food preservers and CFOs, with an emphasis on emerging and culturally important crops currently lacking peer-reviewed recipes. This research is expected to be multidisciplinary. Depending on the Specialist's background, collaboration with chemists, engineers, or material scientists may be needed. Moreover, the Specialist will engage in pedagogical research to evaluate the effectiveness of food safety learning materials and communication strategies that promote understanding of food safety practices among operators of micro-, small-, and mid-sized food processing operations. The results of the Specialist's research can be published in major food safety journals such as the Journal of Food Protection, Food Control, and Journal of Food Safety, in addition to dedicated manuals published through ANR.

**UC ANR network:** The proposed position aligns with the Food Systems, Food Waste, and Business Support Program Team's and UC SAREP's priorities of enabling underserved micro-, small- and mid-sized food businesses, addressing food safety issues that are particularly challenging for smaller food companies (that often lack internal safety specialists), and reducing food waste through safe food preservation. The program team, UC SAREP, and the UC MFP have identified process validation, permitting, and inspection compliance for micro-, small- and mid-scale food producers as major bottlenecks for promoting their economic development. The current UC network does not serve this need; thus, it represents a major knowledge and extension gap. There are existing Specialists focused on consumer food safety and general food processing operations; although these are complementary foci, these positions don't directly serve the aforementioned food safety needs of micro-, small- and mid-sized processors or support the peer-review process validation for CFOs and home food preservers. The unique skillset and focus of the proposed Specialist will promote their collaboration with AES scientists at UC Davis and other UC campuses, such as food chemists and microbiologists, working to develop new food contaminant detection and mitigation measures. Additionally, the Specialist will work with UC MFP and CE Advisors in food systems, small farms, and community and economic development to support small-scale food entrepreneurs.

**Network external to UC ANR:** Through UC Davis's proximity and connections to state government, the Specialist will be able to collaborate with food safety regulators. For instance, the campus regularly advises the California Department of Public Health (CDPH) on food safety issues, such as the efficacy of proposed processing methods in industry applications for Official Process Letters and remedies for Quarantine Restraining Orders for potentially contaminated foods. The Specialist will benefit from CDPH's insight into emerging issues and knowledge gaps in processed food safety, which will allow the Specialist to tailor their research and extension to address those needs. The Specialist will bring food safety expertise to community and economic development initiatives with nonprofit organizations supporting small-scale food entrepreneurs, such as Kitchen Table Advisors, the COOK Alliance, the Pan Valley Institute, Alchemist CDC, La Cocina, and Cultiva La Salud.

**Support:** The FST department and College of Agricultural and Environmental Sciences at UC Davis have committed to providing resources and support to the proposed Specialist, including: adequate office and laboratory space; suitable start-up support; administrative, accounting, and IT support; access to shared analytical and processing equipment; and access to spaces for extension events.

**Other support:** The Specialist's work will make them a competitive applicant for food safety-related research and extension grant programs, such as the USDA NIFA Food Safety Outreach Program, USDA AFRI food safety priority area, and CDFA Specialty Crop Block Grant Program food safety

priority area. Food safety work involving specific commodities may also garner grant funding from the corresponding commodity groups, advisory boards, or trade associations.