September 21, 2017

Food and Drug Administration

Division of Dockets Management

5630 Fishers Lane, Rm. 1061

Rockville, MD 20852

**Attn: Docket No. FDA-2017-N-2697 for “Submission of Proposed Recommendations for Industry on Developing Continuous Manufacturing of Solid Dosage Drug Products in Pharmaceutical Manufacturing; Establishment of a Public Docket.”**

**Electronically filed.**

Dear Sir/Madam:

The United States Pharmacopeia (USP) welcomes the opportunity to provide comments related to the emerging new technology of Pharmaceutical Continuous Manufacturing (PCM), its adoption by the pharmaceutical industry, and the Food and Drug Administration’s (FDA) strategic plan in this area.

USP applauds the thoughtful, innovative, science-based efforts that FDA has initiated in stimulating the advancement of new progress in pharmaceutical development, processing, and testing that supports promoting pharmaceutical quality through emerging technologies such as continuous manufacturing. PCM has the potential to further advance drug quality, as well as to resolve potential drug shortages and more quickly respond to sudden changes in demand for medicines.

As with all emerging technologies in complex fields, questions and challenges will arise, including the need for common standards of quality. We believe that as a scientific organization, USP can partner with FDA and stakeholders in advancing collaborative approaches toward quality, including manufacturing control strategies, raw materials and intermediates, finished product quality issues, process design, and analytical testing methodologies in support of the adoption and implementation of PCM. Examples of recent successful collaborations in this area are described below.

**USP background**

For nearly 200 years, USP has been building foundations essential for a healthier world through public standards and related program that help ensure the quality, safety, and benefit of medicines and foods. We are an independent non-profit governed by a Convention representing over 450 of the leading institutions and organizations in health and science from the public sector; academia; industry and the healthcare practitioner, consumer and patient communities.

Public standards provide common benchmarks, which help define the target for quality medicines for industry, also contributing to practitioner and patient confidence in the integrity of these products. Today, USP sets public standards for the identity, strength, quality, purity, packaging, compounding and labeling of medicines; and as the standards have significantly evolved over time, our mission of ensuring quality medicines remains the same. USP develops public standards through a collaborative and transparent process that brings together the voices and leadership of patients, practitioners, regulators, academics, and industry.

USP standards cover the entire lifecycle of medicines – from manufacturing to distribution and use – and are used in 140 countries around the world to help ensure the integrity of the global supply chain.

**Comments on FDA’s approach to PCM**

USP shares FDA's goal of assuring the availability of quality, safe, and effective medications to patients. We support efforts to advance the quality of medicines through the application of technologies such as those employed in PCM and encourage stakeholders to identify barriers to adoption and implementation of this new manufacturing technology in order to maximize its adoption by industry.

Although continuous manufacturing is well established for some industries, complex process control and validation challenges have appeared to constrain the adoption of continuous manufacturing in the pharmaceutical industry. Implementing a switch from batch to continuous processing will involve a paradigm shift, with significant technological and regulatory challenges to address quality-related issues.

Areas for attention and focus include manufacturing control strategies, raw materials and intermediates, finished product quality issues, process design, and analytical testing methodologies. We are confident that challenges can be addressed through broad stakeholder participation and consideration of dynamic new solutions. Among those are innovative engineering visions and strategies, quality-by-design principles, new product development processes, novel facility design and equipment layouts, and new regulatory approaches.

**USP convening and facilitating collaborative discussions to advance innovation**

USP looks forward to continuing the dialog on PCM and would be pleased to work with FDA and others in convening different perspectives. Our processes, resources, and expertise support an approach to foster collaboration between scientific experts, regulatory agencies, and industry. We sincerely believe that in this capacity, USP could be useful in further amplifying FDA’s efforts in advancing PCM. Recent examples of successful conversations in this space include:

* USP in collaboration with C-SOPS and with the strong support and participation from FDA staff members, including: Dr. Janet Woodcock, Dr. Michael Kopcha, Dr. Lawrence Yu, Dr. Larry Lee, Dr. Thomas O'Connor, and Dr. Celia Cruz, brought together eighty five thought leaders from academia, industries, and government agencies for a PCM Technology & Quality Road Mapping Roundtable in June 2016. The gathering provided an open platform to share knowledge about PCM and insights on the future role of quality standards; identified scientifically sound, novel technologies and control strategies that will enable and grow continuous manufacturing; and helped prepare a technology and quality roadmap for accelerating development, implementation, and standardization of PCM. To formalize the collaboration between USP and C-SOPS, leaders from both organizations signed a memorandum of understanding (MOU) in February 2017.
* In collaboration with and with participation from FDA and industry, in October 2016, USP formed an Expert Panel to assist in advancing PCM technology through the development of public quality standards. Examples of such standards may include documentary standards for 1) general pharmaceutical continuous manufacturing practice guidelines; 2) new quality attributes related to various components of pharmaceutical continuous manufacturing; and 3) quality analytical methods related to inline measurement (e.g., composition, morphology, particle size, etc.); and reference standards related to all of ds related to all of the nd 3) Qtional"er ups // we have better relationships with International Affairs with Cofeprisinline measurement and system/equipment/control calibration.
* In May 2017, USP organized a PCM Workshop for Generics Manufacturers in Mumbai, India, with participation from FDA and a diverse group of senior leaders from manufacturing, process engineering, regulatory, quality, and other areas representing thirty major generics manufacturers in India. The workshop provided in-depth PCM overall know-hows, terminologies, core technologies, and process design-development-validation.

**Conclusion**

We salute and support FDA’s work in PCM and stand ready to work with and serve as a resource for FDA and stakeholders to advance our collective vision of increased access to quality medicines.

We would welcome the opportunity to meet with FDA representatives responsible for continuous manufacturing and other Emerging Technology Program goals covered by the strategic plan to more fully explore and expand upon shared goals, and to discuss areas where USP might offer resources, competences, and capabilities in response to the plan’s express request to broaden and strengthen interactions with partners.

For more information, please contact Elizabeth Miller, Vice President, U.S. Public Policy and Regulatory Affairs, at ehm@usp.org; (240) 221-2064.

Sincerely,

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