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Colorcon appreciates the opportunity to contribute the attached text in response to Commission's Public Consultation in Preparation of a Legal Proposal to Combat Counterfeit medicines for Human Use, specifically to express key ideas for the better protection of patients against the risk of counterfeit medicines.

Colorcon is a medium size company, with approximately 1000 employees worldwide supplying excipient products and technologies to the pharmaceutical industry on a global basis.

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Prescription drug counterfeiting is a threat to the health and safety of the public. The size of the problem cannot be accurately measured but one source estimates drug counterfeiting has the potential to become a $75 billion industry by 2010.[1] Costs in human life and increases in health care expenses due to the ingestion of counterfeit drugs cannot be predicted. Medical professionals, caregivers and consumers are exposed to counterfeit drugs through a range of sources, from legitimate distribution channels to fraudulent Internet sites. Counterfeit drugs can infiltrate legitimate supply chains in a variety of ways, including "salting" and repackaging. Salting happens when counterfeit drugs are added to legitimate drug supplies during legal packaging or repackaging operations. The result is a supply that has both legitimate and counterfeit drugs in legitimate packaging. Repackaging occurs legitimately for a variety of reasons, including changing package labeling or package insert labeling to meet local language requirements or to breakdown bulk shipments into individual doses. The original packaging and the new packaging are then at risk of being illegally reused/used to ship counterfeit drugs. Anytime a drug is packaged or repackaged, there is the potential for "salting" or for the packaging to be used or reused by counterfeiters.

Protecting the dosage itself, which is ingested by the patient, should be a critical concern in the hierarchy of counterfeit-resistant technologies. Protection must start with the dosage because the distribution process for drugs involves repackaging, which is a vulnerable point for counterfeit product introduction, where the dosage becomes separated from the "protected" package. Counterfeit-resistant measures, such as protecting the package and by protecting the supply chain through the use of 'track and trace' and authenticity checks, will be far more effective when the dosage itself is also protected. On-dosage identification technologies can help mitigate the security concern of repackaging by helping to ensure that the dosage itself is identifiable, protected and authenticated.

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Counterfeit drugs place patients at risk when their active ingredient levels are not accurate or when their secondary ingredients include harmful chemical additives. The physical risk to consumers from taking counterfeit medications is then compounded if consumers

choose NOT to take needed medications for fear they might be counterfeit. The problem is complex and extensive enough that heads of global security at Pfizer, John Theriault, and Novartis, James Christian have testified before the United States Health Subcommittee of the House Committee on Energy and Commerce on the critical need to broaden security measures to mitigate the severe and growing threat of drug counterfeiting to patients and the supply. Mr. Theriault warned that the importation of counterfeit, unapproved pharmaceuticals is increasing exponentially, and that regulatory and law enforcement agencies need additional resources to stem this growing crisis. Mr. Christian stated that new technologies "enable companies to track cardboard, not product," emphasizing the importance of a broad concerted effort including both advanced technologies and increased regulation and law enforcement to make progress against the plague of counterfeit medicines. Innovative on-dosage technologies now exist to complement drug packaging technologies, and must be a key element in the solution to combat counterfeit drugs.

Solid dosage forms can be designed with unique features that are more difficult for counterfeiters to duplicate, encouraging them to turn their sights elsewhere. There are many proven, economical on-dosage technologies available today that can make drugs extremely difficult to fake but easy to identify. These technologies or markings can link the dosage to the package counterfeit-resistant technologies or markings, which is particularly important during repackaging. For example, salting authentic products with counterfeit ones in authentic packaging could more easily be identified because each dosage would need to link to the packaging technology used.

Listed below are examples of available on-dosage anti-counterfeiting technologies, including human sensory, overt and covert electronically scan-able and chemical taggant identification. Several of these technologies are similar to those used for U.S. currency.

♦ Overt optically variable technologies:

- Pearlescent color-shifting dosages. By tilting the tablet, the color shifts as specified on the package insert and/or on the package, making it very hard to duplicate. Numerous manufacturing and material parameters must be known and applied to properly simulate the color shift. This technology is challenging to reverse engineer or mimic, so can deter potential counterfeiters from trying to replicate.

- Watermark technology. By tilting the tablet, a watermark appears or disappears on the surface. The watermark could be described on the package insert or package, or exemplified on the package. It would be identifiable by patients, pharmacists and health care providers, while making it difficult for a counterfeiter to imitate..

♦ High-definition and laser-imprinted bar codes and images on the dosage form provide identification control from the manufacturing plant to the patient and restricts the potential for error in repackaging and dispensing. Identified by a scanner, bar codes can also provide information that would link to the package. Standardized numerical identifiers can be placed on each tablet which can be recorded in a database to identify the tablet pedigree, and can be linked to serial numbers on the package. Other high-definition images, similar to images available on U.S. currency, can be applied to a dosage that would be difficult for a counterfeiter to replicate; the images could be described on the package insert, label or package.

♦ Non-visible covert and encrypted security features, including chemical markers and micro-taggants, can be added to the dosage form itself providing rapid authentication of a drug in the field within a few minutes. The micro-taggants can include standardized numerical identifiers relating the specific batch, product, site of manufacture or other information. A link can be established between the micro-taggant on the product and a similar feature on the primary or secondary packaging. These features can not be reverse-engineered by a counterfeiter.

♦ Sensory identification: Adding a flavor or aroma identifier can help patients identify the authenticity of a drug. Lipitor® counterfeits were detected by patients when they noticed a difference in the taste of the counterfeit drug.

On-dosage security technologies as an addition or option to the referenced packaging security should be included in the decision making process on how to combat counterfeit medicines for human use, because they identify and authenticate the actual drug dosage and are economically advantageous. These technologies enable patients, pharmacists and health care providers to better identify counterfeit drugs before administration. Additionally, some of these technologies can help patients themselves identify counterfeits before ingestion, without the need for sophisticated equipment. Sensory perception is typically the only tool that patients have to help them identify potential counterfeits that may get into the supply chain, especially when the drugs are sourced on the Internet. The inclusion will significantly boost the effectiveness in deterring drug counterfeiting, protecting intellectual property, and improving the health and safety of the public.

Finally, to more effectively fight drug counterfeiting, we need a comprehensive process that includes on-dose and on-package identification technologies, tighter distribution controls, greater governmental oversight and, more aggressive law enforcement. The inclusion and coordination of all of these efforts is critical if we are going to be successful in reinforcing our commitment to keeping medicines safe for the world.

[1.] Lewcock, Anna. New law to crack down on drug fakers. In-Pharma Technologist.com, 16 May 2007
http://www.in-pharmatechnologist.com/news/ng.asp?n=76586-congress-counterfeit-draft-b