Summary Report

Seminar on
Recycled Food Packaging:
Scientific Advances and Regulatory Development

September 26, 2019
Holiday Inn Bangkok Sukhumvit, Bangkok, Thailand

Organizers

Co-organizer

In-collaboration with
Overview

The increasing production of plastic causes severe environmental problems. In the context of packaging, the approaches to reduce the demand for virgin plastic have been developed and are already applied to different extents. These strategies include reduction of packaging weight and volume, reuse of packaging and recycling of certain polymers. The regulatory agency in Thailand is now drafting the regulations on recycled packaging. Therefore, ILSI Southeast Asia (ILSI SEA) Region and its Thailand Country Committee organized the Seminar on Recycled Food Packaging: Scientific Advances and Regulatory Development on September 26, 2019, in Bangkok, Thailand, together with the co-organizer: Thailand Food and Drug Administration. This meeting is further supported by our local collaborators: Food Science and Technology Association of Thailand (FoSTAT) and Department of Science Service (DSS), Thailand.

This two-day symposium aimed to:

1) discuss status and challenges in food contact materials (FCMs)
2) share information on safety concerns and US FDA’s regulatory approach for recycling Polyethylene Terephthalate (PET)
3) share updates on food contact materials regulations in Southeast Asia Region
4) provides insights on experience in using recycled PET in Europe
5) underline the migration testing for recycling rPET.
Chairs and Speakers

Asst. Prof. Dr. Chaniphun Butyree  
Mahidol University  
Thailand

Mr. Wanchai Srithongkham  
Food and Drug Administration  
Thailand

Dr. Vanee Komolprasert  
U. S. Food and Drug Administration  
United States

Mrs. Sumalee Tangpitayakul  
Thai Packaging Association  
Thailand

Mr. Leopoldo Becerra  
The Coca-Cola Company  
Thailand

Asst. Prof. Dr. Amporn Sane  
Kasetsart University  
Thailand
Presentations

The meeting commenced by Mr. Wanchai Srithongkham, Thailand Food and Drug Administration (Thai FDA) delivering his welcome speech on behalf of Dr. Tares Krassanairawiwong, Secretary-General of Thai FDA. Dr. Chaniphun Butyree chaired the session during this seminar.

Status and Challenges on Food Contact Material Regulation in Thailand

Mr. Wanchai Srithongkham, Thai FDA, Thailand

In Thailand, the Thai Food and Drug Administration (FDA), Ministry of Public Health (MOPH) is responsible for the safety of food packaging whereas the Thai Industrial Standard Institute (TISI), Ministry of Industry (MOI) is responsible for developing various industrial standards including food contact materials standard. The Office of the Consumer Protection Board (OCPB) under the Prime Minister’s Office is accountable to regulate the labeling of plastic containers while the Department of Foreign Trade (DFT) is accountable for controlling measures for the importing ceramic container and enamelware. The Thai FDA has developed the quality standards for food packaging and three notifications are available: Notification No. 92/2528 (1985) for food Container, Ceramic Container and Enameled Metal Container, Notification No. 295/2548 for Plastic Container as well as Notification No. 369/2558 (2015) for Feeding Bottles and Milk Containers for Infants and Young Children. Under the Notification No. 92/2528 (1985), it is prohibited to use colored plastic containers to contain food except 1) laminate plastic specifically the layer that does not directly contact with food, 2) plastic used to contain fruits which the peel is not consumed and 3) other cases which approval has been obtained from Thai FDA. The use of plastic containers from recycled plastic is strictly prohibited under this notification. However, The Thai FDA is in the process of revising the regulation of plastic food packaging in order to reduce the plastic waste problem. Among the safety concerns of allowing the use of rPET are 1) contaminants from the post-consumer materials, recycled post-consumer material which are not regulated may be incorporated into food packaging supply chain and 3) some adjuvants in the recycled plastics may not be suitable as FCM. In order to address the safety concerns on rPET, Thai FDA will consider each proposed use of recycled plastic on case-by-case basis and strongly based on scientific evidence. In short, the Thai FDA is now developing a Guidance on Safety Assessment and Efficiency Evaluation of Plastic Recycling Process and Recycled Plastics, as well as revising regulation on Qualities or Standards of Plastic Packaging.

Safety Evaluation of Recycled Plastics for Use in Food Packaging Applications

Dr. Vanee Komolprasert, US FDA, United States

FDA supports the recycling of food packaging materials, but recycled food contact materials must be safe for such use. FDA developed a Guidance for Industry, entitled “Use of Recycled Plastics in Food Packaging: Chemistry Considerations,” to highlight the chemistry issues that FDA recommends that the manufacturer of recycled plastics consider during evaluation of a recycling process for producing recycled material suitable for food-contact applications. The possibility that chemical contaminants in plastic materials intended for recycling may remain in the recycled material and could migrate into the food the material contacts is one of the major considerations for the safe use of recycled plastics for food-contact applications and is the main focus of the Guidance. Other aspects of plastics recycling, such
as microbial contamination and structural integrity of the recycled plastic, are also important but are not discussed in the Guidance. In this presentation, Dr. Komolprasert focused on the regulatory review process used to evaluate the efficacy of a recycling process in cleaning and producing recycled plastic that is of a purity suitable for use in food packaging applications.

Updates on FCM Regulations in Southeast Asia Countries  
*Mrs. Sumalee Tangpitayakul, Thai Packaging Association, Thailand*

Thailand has been assigned to be the ASEAN Food Reference Laboratory for Food Contact Materials by the ASEAN Consultative Committee on Standard and Quality (ACCSQ) since 2014. In regard to this, Thailand has done a survey on food contact legislation in the ASEAN countries. The survey (2015) concluded that all ASEAN countries have their own FCM regulations, except for Cambodia, Lao PDR and Myanmar. Mrs. Tangpitayakul then shared the updates on FCM legislations in Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Vietnam.

Experience of the Use of Recycled Polyethylene Terephthalate (rPET)  
*Mr. Leopoldo Becerra, The Coca-Cola Company, Thailand*

Europe Union (EU) has a very good framework for regulating the recycled packaging. The EU Food Contact Framework regulation (EC) No 1935/2004 and two provisions: (EC) No 282/2008 Recycled plastics and (EC) No 10/2011 Virgin plastics have provided clear guidance on the general safety requirement got recycled PET with the aim of producing recycled PET that is free from contaminants that could endanger human health. While EU recycled plastics regulation (EC) No 282/2008 focuses on decontamination process. The recycling process must be capable of removing any contamination from the input that could endanger human health and 95% of the plastic feedstock should have been used for contact with food as the control of contaminant levels in input material. The recycled plastics remain subject to (EU) No 10/2011. EFSA authority has created a flow chart on how to carry out the challenge test and how to calculate the efficiency of the decontamination process with the Sumption of reference contamination level, 3 mg/kg PET. A list of surrogates is also suggested. However, in the operation of quality control for decontamination efficiency in Coca-Cola, an extra surrogate was used, Limonene, a natural solvent made from orange peels. NIAS risk assessment requires the data on toxicity, migration and exposure. Mr. Becerra explained the flow chart for hazard identification in general approach. In EU, it focuses a lot more on the chemical decontamination of the PET, unlike the US FDA which has established the tertiary recycling technology (chemical processing) which involves depolymerization of post-consumer plastic to starting materials, purification and repolymerization of the starting materials to form regenerated polymer. However, this technology is yet to be approved by the EFSA.
Migration Testing for Recycling Polyethylene Terephthalate (rPET)

Dr. Amporn Sane, Kasetsart University, Thailand

Contaminants could come from the raw materials used in the production of FCM, manufacturing process and/or during filling in the packing process. When conducting migration testing, it is ultimately important to understand the chemical structure, molecular weight, the manufacturing process and the factor of degradation of the material. For the migrants, the molecular weight, polarity and volatility greatly affect the rate of migration. The standard protocol of migration testing is well documented by the US FDA and EU. Another important factor is the diffusion coefficient of the materials. There are 4 options of surrogates: 1) polar, volatile surrogate; 2) polar, non-volatile surrogate; 3) non-polar, volatile surrogate and 4) non-polar, non-volatile surrogate. Using the US FDA as the reference, Dr. Sane explained the protocol to conduct migration testing. Other than choosing the surrogates for migration testing, the ‘cocktail effect’, the effect happens when there is an exposition to different chemical substances simultaneously, is also an important factor to be concerned. She also discussed the food stimulants of choices.

During the panel discussion, some were concerned about choosing US FDA or EU as the reference. The experts underlined that the ultimate goal of both regulatory agencies is to ensure the safety use of recycled packaging. When conducting a migration test, there are options of surrogates that can comply with both US FDA and EU guidelines, with considerations of limitations in each step and chemicals chosen. There is also question on the assessment of virgin plastics. In EU regulations, the virgin plastics are required to undergo non-intentionally added substances (NIAS) assessment. Mr. Becerra further highlighted that the EU recycled plastic regulation (EC) No 282/2008 requires the recycled plastic feedstock to be compliant with (EU) No 10/2011, which is the regulation for virgin plastics. In other words, the recycled plastics must be free from contaminants that could endanger human health. Thai FDA pointed out the importance of multiple stakeholder collaborations in revising FCM regulations and development of the guidance on safety assessment of the recycling plastics. The research institutes are opened for collaborations. Thus, Thailand is in good progress in revising the food contact materials regulations.
Biographies of the Chair and Speakers

Asst. Prof. Dr. Chaniphun Butyree
Assistant Professor
Mahidol University
Thailand

Dr. Chaniphun Butyree, Assistant Professor at the Mahidol University, Thailand, a toxicologist by training. She heads the Thailand Risk Assessment Centre (TRAC) and conducts extensive risk assessment projects with the regulatory agencies. Her research interest focuses on dietary factors influence oxidative stress indicator, functional ingredients in foods related health benefit, assay biomarkers of DNA base damage and risk assessment on vitamins and minerals. With her research experience and contribution at the national and international level, Dr. Butyree has been assigned as the main person-in-charged for the safety assessment of recycled plastics for the national project in Thailand. She obtained her M.Sc. (Nutrition) and Ph.D. (Nutrition) at Mahidol University, Thailand.

Mr. Wanchai Srithongkham
Expert in Food Safety and Food Consumption
Board of Director
Food and Drug Administration
Thailand

Mr. Wanchai Srithongkham is the Expert in Food Safety and Food Consumption, Bureau of Food, Food and Drug Administration, Ministry of Public Health, Thailand. In his current capacity, he is responsible to inspect for food premises licensing and monitoring compliance with Food Act B.E. 2511 (Thailand), lead auditing for GMP/HACCP Certification System and support the development of food premises for compliance of Food Act/ International Standard. Mr. Srithongkham received his B.Sc. at Chiangmai University, Thailand and M.Sc. at Kasetsart University, Thailand.

Dr. Vanee Komolprasert
Consumer Safety Officer (CSO), Chemist
Division of Food Contact Substances (DFCS)
Office of Food Additive Safety (OFAS), U. S. Food and Drug Administration (US FDA)
United States

Dr. Vanee Komolprasert is a Consumer Safety Officer (CSO) and a Chemist in the Division of Food Contact Substances (DFCS), Office of Food Additive Safety (OFAS), U.S. Food and Drug Administration, College Park, Maryland. Before joining OFAS, she was a Research Scientist at FDA’s laboratory in Chicago, Illinois, investigating several high priority projects on food packaging safety, one of which involved the use of post-consumer recycled polyethylene terephthalate (PCR-PET) in food packaging. She is the Agency’s regulatory expert in the use of recycled plastics in food packaging and coordinates
the review of industry’s recycling processes to determine if they are effective in producing recycled plastics of a purity suitable for food contact use. She has been with US FDA for over 28 years. She has a diverse background in Food Engineering, Food Packaging, and Food Technology.

Mrs. Sumalee Tangpitayakul
Advisor
Thai Packaging Association
Thailand

Mrs. Sumalee Tangpitayakul is the advisor to the Thai Packaging Association. She has more than 25 years of experience in analytical development and method validation for the determination of contaminants migration from food contact materials. Mrs. Tangpitayakul also has extensive expertise in standards and food contact materials laws. She participates in several working groups including the following: technical committees of the Thai Industrial Standards Institute to develop various standards for food packaging, such as cling film, food plastic container, metal can, etc.; Food and Drug Administration expert technical committee to approve plastic food packaging; the technical committee of method of analysis and sampling of food for the National Bureau of Agricultural Commodity and Food Standards. Mrs. Tangpitayakul has been invited to share her experience at various conferences both national and international. As a result of her diligent and great efforts, the Packaging Laboratory, Department of Science Service, has been designated as ASEAN Reference Laboratory for Food Contact Materials since 2014. Mrs. Tangpitayakul holds an M.Sc. (Chemical Technology), B.Sc. 2nd Honors (Food Technology) Chulalongkorn University, Post Graduate Dip. in Food Science and Nutrition (University of Gent., Belgium), Postgraduate in Food Management (University of Jerusalem, Israel) and has trained in the European Commission Community Reference Laboratory for Food Contact Materials, Ispra, Italy, Official Food Control Authority of the Kanton of Zurich.

Mr. Leopoldo Becerra
ASEAN BU Quality Safety & Environment Director
The Coca-Cola Company
Thailand (formerly based in Belgium)

Mr. Leopoldo Becerra, ASEAN BU Quality Safety & Environment (QSE) Director, The Coca-cola Company (TCC), Thailand, is a highly trained Food Process Engineer who has more than 20 years of experience in food safety/ QSE business knowledge, non-traditional supply chain and etc. He has experience in leading the design and implementation of business with technical governance new model and FS & QSE Culture Excellence. Mr. Becerra was also the QSE BU Lead for World Without Waste Company Strategy. In his current capacity, he facilitates the launching of new product segments and leads the design of QSE and Commercialization Governance models for multi-BU non-traditional supply chains and supports the implementation of these “fit-for-purpose” models.

Mr. Becerra received his B.Sc. in Agricultural Engineering with Specialization in Food Engineering from The Ohio State University, US.
Dr. Amporn Sane is currently the Assistant Professor and heads the Department of Packaging and Materials Technology, Faculty of Agro-Industry, Kasetsart University, Thailand. Her research focuses on bio-based materials, polymer nanocomposites, fabrication of nanoparticles and nanoencapsulation of bioactive compounds, rapid expansion of supercritical solutions processes and supercritical fluid extraction. Dr. Sane received her Ph.D. in Chemical Engineering at Clemson University, United States.