

Feature 1

# The 3rd Stakeholder Dialogue Toward Expanding ECO-CIRCLE®

This year's stakeholder dialogue took place with a focus on the ECO-CIRCLE complete recycling system as in 2007. We invited people from an apparel manufacturer, a consumer-enlightening organization and an environmental event planning institution to express a broad scope of opinions, including "how to expand the coverage of ECO-CIRCLE" and "feasibility of collaboration between environmental businesses and civilian environmental activities."

## History of ECO-CIRCLE®

Traditionally, 90% of used clothing has been handled as waste to be burnt or to go into landfill. ECO-CIRCLE is a world-first polyester recycling system based on a chemical recycling technology created by Teijin Fibers Limited. Because used poly-

ester fibers can be regenerated into products with equivalent quality to those produced from petroleum, qualitative deterioration, a drawback in many conventional recycled products, is avoided. The frequent recyclability leads to oil resource conservation and reduction of volume of trash and other waste. Furthermore, the production of polyester fibers

using "fiber-to-fiber" recycling has been shown to cut 84% of energy consumption compared to the production of polyester fibers from petroleum, and to reduce 77% of CO<sub>2</sub> emissions compared to incineration of the product without recycling ("Report of LCA Survey on Textile Goods" by the Ministry of Economy, Trade and Industry of Japan).

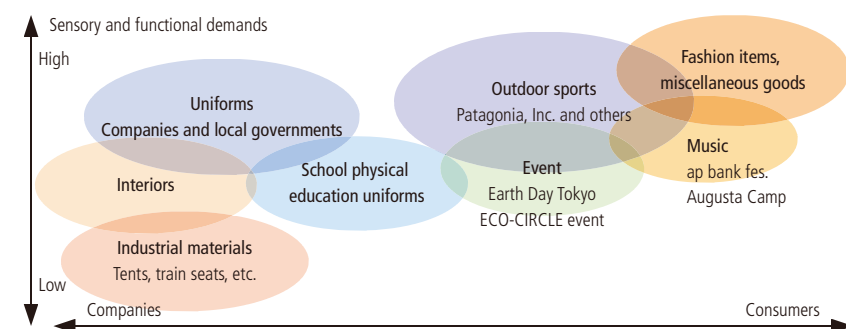
Launched with the participation of uniform manufacturers in 1999, the ECO-CIRCLE project presently has about 110 members, including manufacturers of apparel and sport gear. They are engaged in the recovery and reuse of used polyester products and the development of easily recyclable items in cooperation with the Teijin Group. Used polyester fiber products recovered from their users by these members are sent to the Teijin Fibers Matsuyama Factory in Ehime Prefecture in Japan. The used clothing and other polyester fiber products are milled and purified to remove all impurities, and then recycled into polyester feedstock DMT (dimethyl terephthalate). As such, the raw material is completely of the same quality as that from petroleum, and is processed into a new supply of polyester fiber.

The annual sales of polyester fiber regenerated by chemical recycling for FY2008 was 4,500 tons, an amount equivalent to about 11% of the Matsuyama Factory's capacity of polyester fiber production. In 2008 we faced a severe situation, with reduced buying in the first half due to surges in raw material prices, and decreased demand due to the cooling of the global economy in the last half.

The ECO-CIRCLE® complete recycling system



Progress in ECO-CIRCLE®



**Hideo Asano**  
General Manager, Environmental Promotion Department, Chikuma & Co., Ltd.  
Chikuma is a general apparel trading company engaged in the manufacture and sales of various uniforms, men's suits, women's suits and other items. It is one of the largest traders of uniforms in the industry. It is a member of ECO-CIRCLE.

## I suggest you hold information exchange meetings among the members of ECO-CIRCLE® (Asano)

calculation has been adopted, and we are going to propose an appropriate method for synthetic fibers. We believe it will be necessary to take onboard opinions from industry, national government, university and other sectors. As for your second suggestion, on information exchange, it may be somewhat difficult to choose an appropriate theme, so we would like to have a little more time to investigate more specifically.

**Nakajima:** The cups, venue maps and other items used at the various events we organize contain more polyester fiber than you would imagine. I think the spread of ECO-CIRCLE products will be facilitated if their prices were to be slightly reduced. Also, the recovery rate for ECO-CIRCLE products is expected to rise, provided that event visitors realize their recyclability when taking them in hand.

**Teijin:** Although organizers of environment-related events actively adopt ECO-CIRCLE products, sponsors of other events tend to choose cheap products.

## 1 Expectations for ECO-CIRCLE

**Teijin:** First, we would like to ask you to express your expectations for the ECO-CIRCLE initiatives.

**Asano:** We are often requested by companies which use our uniforms to submit a proposal or report on the degree to which environmental burden can be reduced through utilization of the ECO-CIRCLE system. Apparel manufacturers like us have to be engaged in life cycle assessment (LCA) of our products. In this regard, we cannot obtain adequate LCA data—"From the cradle to the grave" data—unless cooperating with synthetic fiber manufacturers like Teijin Fibers and with consumers. Among the 110 members of the ECO-CIRCLE system, some may compete with others, but I advise them to share all information and upgrade their activities within the relevant industry. I propose that information exchange meetings for member companies be held approximately twice a year to discuss a broad range of topics and expand the ECO-CIRCLE project.

**Teijin:** Regarding your first suggestion about LCA, the Apparel LCA Study Group was organized in June last year, and the Teijin Group is participating in it. For clothing, however, no method of

**Nakajima:** I suggest you inform consumers of what is meant by ECO-CIRCLE, namely "recycling many times," when working to disseminate ECO-CIRCLE to them. I don't think so many people accurately understand the true meaning of ECO-CIRCLE.

**Teijin:** Hearing our explanation for the ECO-CIRCLE system, people sometimes misunderstand, thinking that "PET bottles are collected and burnt, with the heat being reused." We realize that there is a gap between the consumers' understanding and own. It is our task to trans-

## 2 How to Raise Awareness among Consumers

**Nakajima:** I would like you to make active approaches to companies that have some difficulty in engaging directly in environmental activities, such as those in the logistics and apparel industries, since they would be motivated to conduct environmental activities by being involved in the ECO-CIRCLE project.

**Teijin:** We are promoting recycling of company uniforms and other items in cooperation with Chikuma & Co., Ltd., and others. The number of member companies of the ECO-CIRCLE system is increasing gradually in industries that are familiar to the consumer, such as the fashion industry.



ECO-CIRCLE® materials were processed into banners, venue maps, staff ID cards and other items used at the venue for the Earth Day Tokyo 2008.

**Yu Nakajima**  
Secretary-General, Executive Committee of Earth Day Tokyo 2009  
The Committee sponsors Earth Day Tokyo, a yearly event aiming at preserving the global environment.



## The ideal would be for polyester fiber products to be collected in all communities and areas (Nakajima)

\*1 Definitions for the three methods of recycling  
 Material recycling: A mode of recycling in which used plastics etc., are thermally melted and re-molded, and recycled as new products.  
 Thermal recycling: A mode of recycling in which used substances are burnt and recycled into heat sources.  
 Chemical recycling: A mode of recycling in which used substances are chemically degraded and recycled into raw materials.

mit the right message in a more easily understandable way.

**Shino:** Consumers seem to be surprised at the fact of “100 return for 100 input,” rather than an 80% reduction in CO<sub>2</sub> emissions. I suggest you emphasize this aspect, which will help make them interested more in the ECO-CIRCLE system.

**Tatsumi:** Young consumers are more responsive than elderly ones. They are resourceful and flexible probably because they have received environmental education from their childhood. For this reason, I think more approaches should be made to this younger generation. It will be nice to see that the coverage of ECO-CIRCLE will be expanded not only to uniforms and sportswear, but also to casual clothes and more dressy garments. I love polyester clothing because it is easily washable at home, quick-drying, and amazingly durable.

**Nakajima:** From the viewpoint of ecology, emphasis should be placed on using good items for a long time, rather than on the recycled material or reusability. I think this is the very essence of ecology. With this in mind, it is of paramount importance to recycle articles that are no longer usable in any way. Through the ECO-CIRCLE system I hope that you will implement targeted communication with apparel manufacturers which are able to create fashionable items that feature the essential advantages of polyester, without quality deterioration,

**Kenji Shino**  
 Environmental issues officer, Japan Branch of Patagonia, Inc.  
 The company is a US-based apparel manufacturer engaged in the production and marketing of environmentally conscious outdoor gear, sportswear and other products. A member of the ECO-CIRCLE system.



**Shino:** Design is also important. Universally wearable at any time and durable --- I would like to propose that you collaborate with such a brand.

**Teijin:** Yes, as you suggest, we think it is necessary to see that ECO-CIRCLE permeates through to fashion designers and others. In collaboration with Vantan Design Institute, we provide its students with ECO-CIRCLE fabrics and ask them to propose unique designs.

**Nakajima:** It will be nice to see ECO-CIRCLE to be expanded for its “sensory” characteristics, such as clothing comfort, although it would be difficult to demonstrate such characteristics in data format.

**Tatsumi:** An easily understandable explanation for ECO-CIRCLE is necessary, isn't it?

**Teijin:** We think that together with apparel companies we have to translate our intent into a clear message and deliver it to the general public.

**Shino:** I feel little is known about the differences between chemical recycling in ECO-CIRCLE and material recycling, thermal recycling and the like. Additionally, customers occasionally ask us such questions as “Aren't harmful substances used during the recycling process?” and “Don't ECO-CIRCLE activities have a different type of environmental impact?” I feel that the mitigation of environmental footprints thanks to ECO-CIRCLE has not been sufficiently recognized.

**Teijin:** This is also a subject of discussion at the Study Group for Developing and Promoting a Carbon Footprint Program, and will require some time. For all chemical substances used in our recycling processes, we have cleared the requirements in the EU RoHS Directives and chemical legislation REACH Regulation. The substances also comply with our internal standards and Design for Environment criteria.

**You have to appeal the “100 return for 100 input” principle behind the ECO-CIRCLE® complete recycling system. (Shino)**

**Shino:** In order to expand ECO-CIRCLE among consumers, it would be preferable to spread the concept of green purchasing for clothing items.

**Teijin:** We have been a member of the Study Group for Drawing up Guidelines for Green Purchasing Networks for Clothing, and there are a number of challenges concerning how to expand the concept of green purchasing.

**Tatsumi:** Yes, ECO-CIRCLE does not need to be understood by all people, but it is nice that the ECO-CIRCLE project is expanded by those who are impressed by the recycling of fibers, and are happy to buy recycled products. If consumers agree and identify with the project, it will be spread automatically by word-of-mouth. For this reason, many ECO-CIRCLE commodities must be supplied to the market.

### 3 Finding New Applications and Action to Build a Legal Framework

**Tatsumi:** It is also necessary to inform them of the fact that ECO-CIRCLE products offer comfortable material not only for apparel, but also for interior-related articles, such as bedcovers and sheets, which are familiar to consumers. If consumers do not first purchase the products, nothing will happen.

**Teijin:** We are also seeking to promote efforts other than those for curtains, which we are currently marketing. Although polyester is utilized in the coverings of some chairs, its recovery is difficult. We have proposed that futon mats, as a whole including their packing, be made of polyester, but they are also difficult to recover. These items each present different problems.

**Nakajima:** For example, if used futon mats are brought to nearby schools, as

**I hope that the business sector will positively advertise ECO-CIRCLE®, which, I believe, will lead to the spread of the project among consumers. (Tatsumi)**

with town-wide campaigns like collecting Bell Marks or old newspapers, ECO-CIRCLE will serve as a catalyst for community activities.

**Teijin:** We hear that a local government is implementing a project to recover used physical exercise uniforms at schools. Please note, however, that beginning with collection is unlikely to lead to the use of our ECO-CIRCLE products. The major problems reside in how used products are received, and for what purposes recycled products are used. For example, the members of the Teijin Matsuyama Factory's Teijin Soccer School wear uniforms regenerated through the ECO-CIRCLE network. We would like to expand the coverage to include other companies dealing with sportswear made of polyester, particularly those for soccer, a sport with worldwide popularity.

**Tatsumi:** It will be nice to see many teams of various sports using polyester uniforms. Polyester fiber offers many advantages not only for apparel, but also for industrial applications. You have to raise awareness of these features among the general public. By doing so, you will be able to achieve further success in your environmental business, won't you?

**Teijin:** Only a few people are aware of the fact the global consumption of polyester is almost the same as that of cotton. Today polyester is a major material for apparel, so a problem remains to be solved concerning how its environmental impact is to be managed, and what actions we must take to raise awareness.

**Tatsumi:** Involved in the activities of the Green Purchasing Network, we realize that it is rather difficult to expand coverage to consumers. In the context of business-to-business trade, communication on green procurement goes smoothly. I think business-to-business trade should also be emphasized, while making efforts to expand the coverage to involve consumers.

For example, if ECO-CIRCLE products are used in train seats and cushions, the company that uses such items will be evaluated highly by customers for its environmental consciousness. I think that strong promotion from the business sector will lead to the expansion of coverage to consumers. Automobile seats and cushions are suitable for recycling through ECO-CIRCLE, aren't they?

**Teijin:** We have begun to investigate recyclable automobile materials, and are planning to recycle other industrial polyester products.

**Shino:** I think that the more ECO-CIRCLE is expanded to daily commodities, in addition to clothing, the more acute the need will become for development of collection bases. I think a scheme including implementation of legislation will be necessary that allows the collection of products bearing the ECO-CIRCLE Mark even by those other than their distributors. A framework like the Home Appliance Recycling Law and the Law on the Recycling of Containers and Packages is required. I would like you to approach administrative agencies as a leading company in the industry.



**Kikuko Tatsumi**  
 Executive Director, Nippon Association of Consumer Specialists (NACS)  
 The Association plays a role in filling the wide variety of gaps between business enterprises and consumers through activities to raise consumer awareness.

**Teijin:** Because imported items account for the great majority of clothing available in Japan, a key point resides in how we are able to make efforts that involve foreign companies. Additionally, domestic apparel companies are for the most part small- or medium-sized enterprises. Now is the time when we have to unify the industry's activities.

Today, by receiving your valuable opinions, we have realized what is lacking, and what needs to be done in operating and expanding the ECO-CIRCLE project. We hope that you will continue to provide advice and suggestions. Thank you.

### Response to the Opinions of Stakeholders

In the very vigorous discussions conducted in the dialogue we received valuable opinions emphasizing the multifaceted aspect of problems that need to be solved in order to expand ECO-CIRCLE, i.e., both highlighting of sensory characteristics and disclosure of data are required. We have also realized the importance of appealing to individual consumers, approaching national governments, and global as well as domestic viewpoints. Although it would be difficult to address all these challenges together, by prioritizing our efforts, we are determined to carry on making progress so that our efforts will be seen to be advancing on the occasion of the next dialogue. (Tai)

**The 3rd Stakeholder Dialogue**  
 Time: February 27 (Friday), 2009  
 Venue: Teijin's Congress Room, West Tower, Kasumigaseki Common Gate  
 Participants from the Teijin Group:  
 Shigeru Ookawara (Marketing Director, Teijin Fibers Limited), Yuichiro Ikeda (Filament Planning & Control Office, Teijin Fibers Limited), Hisae Tai (General Manager, Teijin Limited CSR Planning Office)

