



## The 2nd Stakeholder Dialogue

### Feature 2 Operation of the Environmentally Friendly Design Guidelines

#### How Did Environmental Experts Evaluate Our Efforts?

The Teijin Group newly formulated guidelines for environmentally friendly design, one of the three core elements of our Sustainable Environment Initiatives.

We invited experts on environmental issues to open our second dialogue, seeking their opinions on the operation of the new Guidelines and related issues.

After explaining the background of formulating the Guidelines and how they are applied, we described four examples, and exchanged opinions with the experts from respective viewpoints.

Although the Guidelines are operated mainly by the Teijin Group PL and Quality Assessment Subcommittee, we newly established the Expert Committee for Environmentally Friendly Design to promote environmentally friendly design and provide technical support. The operating organization was incorporated in the well-established acting organization to follow the plan, do, check, action cycle.

First, we make a self-evaluation of the products and processes to which the subject criteria of the Guidelines are applicable, using “the improvement checklist method” (→P30).

The products and processes judged to meet the criteria are subject to the specified procedures, and then approved by the Chairperson of the Teijin Group PL and Quality Assessment Subcommittee as environmentally friendly design products and processes.

The approved products and processes are subject to annual PL and quality assur-

ance auditing. This checks the approval status to determine whether to continue the approval, to re-evaluate the environmental performance, or to withdraw the approval.

The Teijin Group is now evaluating existing eco-products to clarify the present status of our environmentally friendly design products. Based on the results of these evaluations, we will reconsider the indexes and targets for our activities to promote environmentally friendly design, which may lead to a revision of the Guidelines. In our environmental management, we will continue to verify our achievements by audits, and use them to take appropriate measures.

#### The 2nd Stakeholder Dialogue

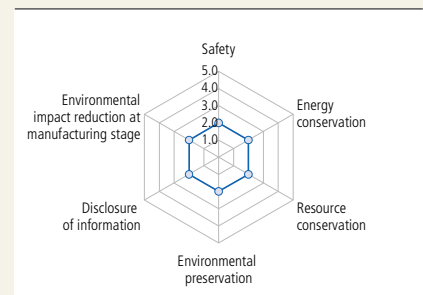
Time: 14:00-17:00, February 22 (Friday), 2008

Venue: Teijin’s Congress Room, WestTower, Kasumigaseki Common Gate

Content: Explanatory and opinion exchange meeting for the Environmentally Friendly Design Guidelines

#### How to Read Radar Charts

For “environmental impact reduction at the manufacturing stage,” an in-house step, each product is evaluated on the basis of a numerical value calculated by dividing the environmental and resource efficiency index of the particular product by the environmental and resource efficiency index of a reference product. As for steps to be taken by companies outside the Teijin Group, i.e., safety, energy conservation, resource conservation, environmental preservation and disclosure of information, each product is evaluated using a 5-grade scoring system. Specifically, the product is given 2 points if judged to be equivalent to a reference product which is Teijin’s conventional product or a competitor’s product; 1 point if judged to be an inferior product, and 3 to 5 points if judged to be a superior product depending on the degree of superiority.



# Infiltrate Corporate Philosophy into Employees with Consumers' Viewpoint in Mind

Hiroyuki Sato

I think it is highly commendable that the Teijin Group includes accurate evaluations of its products and processes with an emphasis on environmental consciousness and human safety in its management.

You have chosen four products with different characteristics to exemplify your efforts for environmentally friendly design. However, there is variation among the example products with respect to the choice of reference products and the extent of evaluation of environmental aspects. For example, are these four products evaluable from the same viewpoint? You need to answer this question before promoting your new approval system.

You are encouraged to use the checklist to accurately realize the aspects, both positive and negative ones, of your product design features and processes, not only for your existing products, but also for new products under development. Hence, the Teijin Group will make remarkable progress in environmental management.

If you evaluate applicable products using the checklist and publish the results in the form of radar charts and use them for marketing activities, people will have a better impression of the Teijin Group as contributing to environmental preservation.

I have two suggestions for you. First, you should instill in all employees the philosophy of "accurately evaluating products and processes developed in-house, and endeavoring to be environmentally conscious." I hope that by doing so, you will achieve steady, significant results. Second, please consider what end-user consumers think of Teijin's products in the lifecycle of each product.

I believe the establishment and implementation of your new system is a good opportunity for raising awareness of environmentally friendly design among Teijin Group employees.



Green Purchasing Network  
Managing Director and Chief of Secretariat  
(as of February 22, 2008)  
Hiroyuki Sato

Graduated from Nagoya University's School of Law. Specialist in purchasing of environmentally friendly products, environmental labeling and environmental communication. Part-time lecturer at Tokyo University of Art and Design. Also a member and director of various associations. Author of "Environmental Labeling" (co-author, published by the Japan Environmental Management Association for Industry) and other books.

## Products Approved as Meeting the Environmentally Friendly Design Criteria

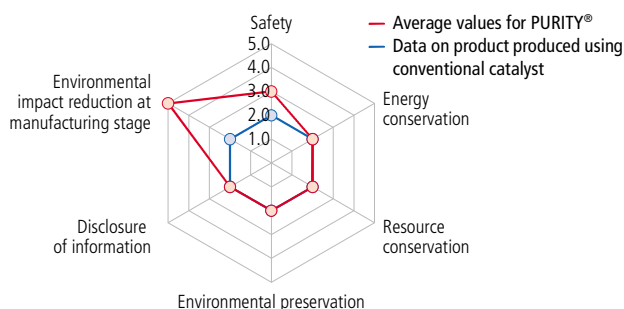
### Example 1: Next-Generation Polyester Fiber PURITY®

In 2001, Teijin Fibers Limited succeeded in developing a polyester polymerization catalyst containing no heavy metals\* such as antimony, and introduced it commercially for producing the high-quality polyester fiber PURITY. Since then, PURITY has been used in a wide variety of items, including textiles, PET bottles and films.



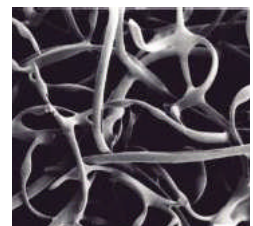
\*Heavy metals: In the Teijin Group, a heavy metal is defined as a metal having a specific density of not less than 5.0, and subject to regulation by the Chemical Substance Management Law.

#### Summary by item for evaluation



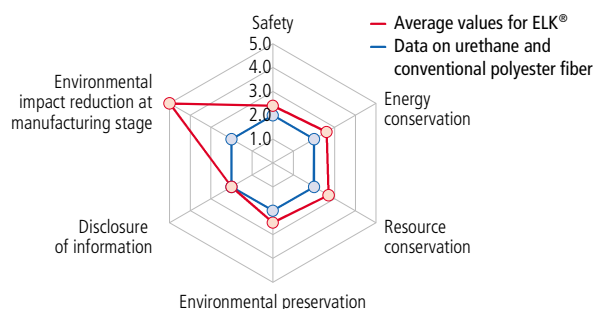
### Example 2: Polyester Fiber Cushioning Material ELK®

In July 2007, ELK, a high-performance polyester fiber cushioning material produced and sold by Teijin Fibers, was selected for use in the economy seats of the next-generation N700-series Shinkansen trains (➡P16). With its lower power consumption, lighter weight for faster acceleration, and higher recyclability (covered in the ECO-CIRCLE complete recycling system), it is advantageous over urethane, a conventional seat material for railroad trains.



Magnified view of ELK® structure

#### Summary by item for evaluation



# A Significant First Step for a Material Manufacturer Continuous Efforts to Follow the PDCA Cycle Expected

Masahiko Hirao

First of all, your efforts to evaluate materials from the viewpoint of environmentally friendly design are unique and laudable. This is an excellent first step for the Teijin Group's new initiatives.

It is easy to think that energy conservation and weight reduction can be achieved merely by the efforts of commercial assemblers, but actually, technical development by material manufacturers, like the Teijin Group, also has major effects. It is therefore highly significant that you are working to improve the environmental quality of your products while taking into consideration environmental aspects at the material development and production stages.

You need to clearly define the points to evaluate each product in terms of environmental friendliness before you make ratings and establish criteria. In the case of carbon fiber, for example, a low rating is given at the manufacturing stage because of its high environmental impact per unit weight compared to other mate-

rials. On the other hand, it is light and tough, so it improves fuel efficiency and significantly saves energy when used in aircraft bodies. By contrast, PURITY is highly rated because it uses no heavy metals at the manufacturing stage.

Regarding the operating system, you have declared that you are conducting environmentally friendly design for materials while following the plan, do, check, action cycle, but I recommend you to build a mechanism to follow the management cycle. I hope that you will be able to establish a system for continually and steadily raising the level of your activities by positively incorporating experts' opinions, as well as proposals within the Teijin Group.



Professor, the University of Tokyo's Graduate School of Engineering  
Masahiko Hirao

Left the Doctoral Course of the University of Tokyo's Graduate School of Engineering. After working as a researcher for Hitachi, Ltd. etc., he was appointed to his current position. Specializing in process system engineering and lifecycle engineering. Conducting a broad range of research activities, from environmentally conscious chemical plants to design of sustainable social systems. A director of the Green Purchasing Network, member of the Committee for Establishing Categories and Criteria, and director of the Institute of Life Cycle Assessment, Japan. Author of "Tokeigaku Nyumon (Introduction to Statistics)" (co-author, published by Kogyo Chosakai Publishing), "LCA-no-Jissen (Practice of Lifecycle Assessment)" (co-author, published by the Japan Environmental Management Association for Industry) and others.

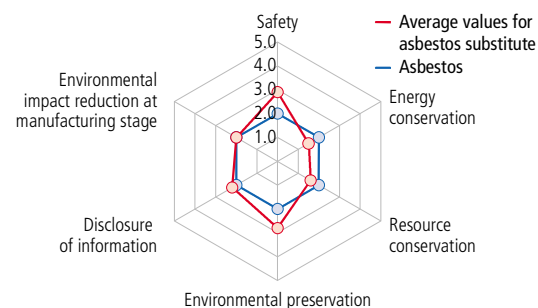
## Products Approved as Meeting the Environmentally Friendly Design Criteria

### Example 3: Brake Pad Made of Asbestos Substitute Material

The Teijin Group's High Performance Fibers Business division produces and markets para-aramid fiber as a substitute for toxic asbestos traditionally used for automobile brake pads. Our material is attracting attention for its safety.



Summary by item for evaluation

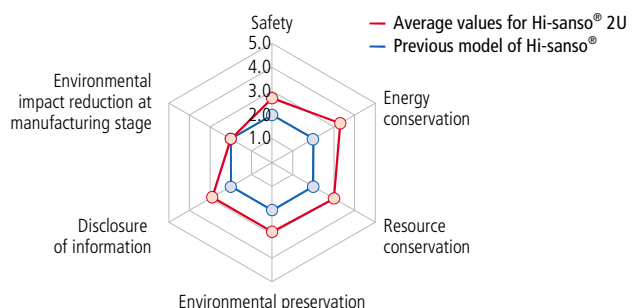


### Example 4: Medical Oxygen Concentrator Hi-sanso® 2U

Teijin Pharma launched Hi-sanso 2U, a home healthcare oxygen concentrator which is easier to use by patients using oxygen concentrators, and which is compact and energy efficient, in June 2007. We are now soliciting new renting customers among medical institutions nationwide.



Summary by item for evaluation



## Clearly Identify Issues

Hiroaki Koshibu (moderator of the dialogue)

While moderating today's dialogue, I was impressed by the Teijin Group's sincere efforts to produce products and processes taking into consideration environmental friendliness and safety.

In the case of copying machines, for example, it is evident that if evaluated throughout the lifecycle, the electricity and paper consumed when using the product have a major impact on the environment. Then, one can identify problems and work to derive solutions to improve the product. Referring to the examples you have given today, the target of product improvement in the lifecycle is unclear. You should clarify what to focus on for materials, which are the core of the Teijin Group's business. This will stimulate your efforts for environmentally friendly design. As for choosing reference products, you should clarify which to use, your older model or a competitor's product, which will help improve your products.

You should make sure this approval

system can be easily understood by all employees of the Teijin Group, not only those in charge of the relevant work. Ideally, you should let outside stakeholders, including consumers, clearly know why a product is highly regarded in terms of environmentally friendly design.

I sincerely hope that you will make further progress by using today's discussion as the starting point, and that you will release even better products with environmentally friendly designs.



Representative of the EcoDesign Promotion Network  
Hiroaki Koshibu (moderator of the dialogue)

Graduated from Keio University's Faculty of Law. Joined Fuji Xerox Co., Ltd. in 1963. Retired from Fuji Xerox in 2002 after serving as Environment and Product Safety Manager and Environment Adviser. Working as a regular adviser to the Green Purchasing Network, vice-chairman of the Japanese committee of ISO/IEC/JTC1 SC28, and the Environmental Management System (EMS) Auditor, etc.

### Notes on the Stakeholder Dialogue

We have received valuable opinions on the operation of our Environmentally Friendly Design Guidelines, which have just gone into operation, from a broad range of experts. The opinions included severe suggestions and unique advice. We will formulate the next plan with reference to these valuable opinions we received at the dialogue. We look forward to receiving your advice again in the future. We will continue to enhance environmentally friendly design, which is one of the three core elements of our Sustainable Environmental Initiatives. Thank you.



ESH Office General Manager  
Yo Goto



CSR Staff Office General Manager  
Hisae Tai

#### Participants from the Teijin Group (as of February 22, 2008)

Yo Goto (General Manager, Teijin Limited ESH Office), Hisae Tai (General Manager, Teijin Limited CSR Staff Office), Ichiro Okamoto (Manager, Teijin Fibers Limited Research & Development Coordination Department), Nobuyuki Yamamoto (Manager, Teijin Fibers Limited, Tetron Staple Fibers Department, Staple Fibers Technology Section), Hiroshi Abiru (Manager, Teijin Techno Products Limited, Acetic Anhydride Plant), Shunichi Uchida (Teijin Techno Products Limited, Para-Aramid Business Department Twaron Section-2), Naoshi Umemoto (Manager, Teijin Pharma Limited, Pharmaceutical Quality Assurance Department), Hiroshi Tokuda (Teijin Pharma Limited, Personnel and Administration Department)

## Feature 2: The 2nd Stakeholder Dialogue Operation of the Environmentally Friendly Design Guidelines