DAICEL CHEMICAL INDUSTRIES, LTD.

Inquiries:
Responsible Care Division
1239, Shinzaike, Aboshi-ku, Himeji-shi,
Hyogo, 671-1281, Japan
Tel: +81-79-273-7584
Fax: +81-79-273-7911

Corporate Compliance Program Division
JR Shinagawa East Bldg., 2-18-1, Konan,
Minato-ku, Tokyo, 108-8230, Japan
Tel: +81-3-6711-8110
Fax: +81-3-6711-8138

www.daicel.com/en

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Responsible Care®

The Daicel Group

CSR Report 2011

The Best Solution for You

DAICEL CHEMICAL INDUSTRIES, LTD.

DAICEL CORPORATION

We will set sail anew as Daicel Corporation.

1919
Dainippon Celluloid Company Limited

Eight celluloid producers merged to establish Dainippon Celluloid.

1966
Daicel Co., Ltd.

Dainippon Celluloid was renamed Daicel Co., Ltd., adopting the shorter nickname widely in use. The new name also reflected a change in the nature of the business, from operations centered on the celluloid business to those focusing on cellulose and organic chemicals.

1979
Daicel Chemical Industries, Ltd.

ダイセル化学工業株式会社
DAICEL CHEMICAL INDUSTRIES, LTD.

During the late 1970s, Daicel Co., Ltd. expanded its operations in acetic acid derivatives and other organic chemicals, as well as engineering plastics and other polymers. The corporate name was changed to Daicel Chemical Industries, Ltd. to reflect this increased focus on "chemicals" and additional growth.

2011

New corporate name >>>

DAICEL CORPORATION

DAICEL

This name demonstrates our strong determination to continue expanding beyond the chemical industry by penetrating such new fields as automobile airbag inflators. Setting sail anew as Daicel Corporation, we will accelerate growth in new fields.

Our name has long contained the phrase "chemical industry," reflecting our core technologies in cellulosic derivatives, organic chemicals, polymer chemicals, and gunpowder engineering. However, the nature of our business has now expanded beyond this exclusive industry to encompass businesses related to assembly processes, as represented by the automotive airbag inflator segment (Pyrotechnic Devices), which has also grown to become a core business.

We have decided to change our trade name in order to demonstrate, both internally and externally, Daicel's intention to continue expanding beyond the chemical industry by employing the proprietary technologies and unique expertise evolved from the chemical-based foundation of our business.

On the occasion of this name change, Daicel Corporation is working to accurately identify the needs of society and the demands of our customers. "Grand Vision 2020" is our long-term vision to harness the energy of all Daicel Group members worldwide, working together towards the common goal of realizing these needs. By developing world-class solutions for our customers, we are becoming a truly global corporation.

Effective date of change of corporate name: October 1, 2011

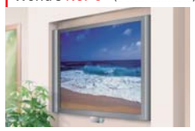
Daicel Corporation proudly delivers the best solutions to the global market

Major Applications of Daicel Group Products

Many of Daicel Group products are basic materials, as such, the general public may come in contact with them without even noticing it.

Here we introduce finished goods around you that are produced using Daicel Group products and materials.

World's No. 1 *Sales share (Daicel estimate)



❶ LCDs
C TAC (cellulose acetate for LCD optical films)

❷ Cigarette filters
C Acetate tow, Cellulose acetate

❸ Civil engineering and oil drilling
C CMC

❹ Eyeglass frames and ping-pong balls
C Celluloid

❺ Polyester fibers
O Acetic acid

❻ Cosmetics, shampoos and conditioners
O 1, 3-BG
C HEC

❼ Pharmaceuticals
O Ketene derivatives, monochloro-acetic acid, amines and pyridines
C CMC

❽ Automotive paints
O Caprolactone and special epoxy resins

❾ Printed circuit boards
O Epoxy compounds

World's No. 1 *Sales share (Daicel estimate)

❿ Pharmaceutical development
O Chiral columns

POM World's No. 1 *Production capacity (Daicel estimate)

⓫ Auto parts
P POM, PBT, PPS, SAN and ABS

LCP World's No. 1 POM World's No. 1 *Production capacity (Daicel estimate)

⓬ Office equipment and electronic components
P POM, PBT, LCP and PPS

⓭ Electrical equipment, office equipment and telecommunication devices
P SAN, ABS and polyamide resins

⓮ Food trays
P Styrene sheets and finished goods

⓯ Packaging and films for snacks and pocket warmers
P Packaging films

⓰ Agricultural materials
P Foamed polyethylene netting

Japan's No. 1 / World's No. 2 *Production capacity (Daicel estimate)

⓱ Airbag systems
P Inflators

⓲ Water filtration and wastewater treatment
O Reverse osmosis membranes and ultrafiltration membranes

⓳ Household articles
O Improved sink-corner strainer

C : Cellulosic derivatives
O : Organic chemicals
P : Plastics and films
P : Pyrotechnic devices
O : Others

Contents

The Daicel Group CSR Report 2011

Daicel Chemical Industries, Ltd. has published an annual Environmental and Safety Report since fiscal 2000 (year ended March 31, 2001). Each of these reports served as a compilation of the Company's Responsible Care Initiatives, focusing on the reporting of environmental and safety activities implemented each fiscal year. From fiscal 2007 (year ended March 31, 2008), the scope of reporting was expanded to include social activities, and the report title was changed accordingly to Environmental, Safety and Social Report. From fiscal 2009 (year ended March 31, 2010), CSR reporting was enhanced with the addition of "Carrying out CSR Initiatives."

Since 2010, we adopted the title, The Daicel Group CSR Report, in order to publish the reports with due consideration given to reader-friendliness, understandability and proactive disclosure.

This report is primarily a compilation of the Daicel Group's activities in the areas of business, social contribution, environmental preservation and safety during fiscal 2010 (year ended March 31, 2011).

Also, in order to ensure the reliability of its reports, Daicel has submitted them to the Japan Responsible Care Council (JRCC) for third-party verification annually since 2004.

* CSR Reports of Polyplastics Co., Ltd.
Group company Polyplastics' CSR reports are provided on their website at:
web www.polyplastics.com/en/company/csr/index.vm

2011: International Year of Chemistry (IYC2011)

The year 2011 coincides with the 100th anniversary of the Nobel Prize awarded to Madame Marie Curie. The United Nations has decided to mark this memorable year as the International Year of Chemistry. During 2011, various projects and events will be undertaken across the world in line with the following unifying theme and objectives.

Unifying Theme: "Chemistry—our life, our future"

Objectives:

1. Increase the public appreciation of chemistry in meeting world needs
2. Encourage interest in chemistry among young people
3. Generate enthusiasm for the creative future of chemistry
4. Celebrate the contributions of women to science

Embracing the unifying theme and objectives wholeheartedly, the Daicel Group will participate in a variety of commemorative projects and events throughout 2011.

International Year of CHEMISTRY 2011

Interview with the President

Misao Fudaba
President and CEO
Daicel Chemical Industries, Ltd.

M. Fudaba

First and foremost, representing the entire Daicel Group, we would like to express our deepest sympathy to the people affected by the Great East Japan Earthquake. At the same time, we offer heartfelt condolences to the victims and survivors of the disaster.

The Daicel Group—consisting of Daicel Chemical Industries, Ltd., Polyplastics Co., Ltd. and other Group companies—has donated a total ¥60 million and provided emergency supplies in order to contribute to relief and restoration in the disaster region. In cooperation with our labor union, we have promoted Groupwide activities to provide support after the disaster, including fund-raising activities involving the Group's executives.

It is our sincere wish that you and yours remain safe. We strongly hope for the quickest-possible recovery and a return to normal living conditions.

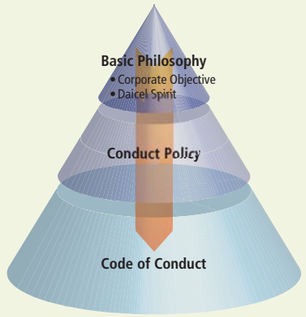
Q. Can you provide a brief review of Daicel's business during fiscal 2010 ended March 31, 2011?

A. In the first half of the year, demand for our products was recovering, supported by export to China. In the second half, the strong yen and rising prices of raw materials and fuels placed downward pressure on the Company's earnings. Furthermore, the Great East Japan Earthquake, an event of unprecedented scale, struck in March 2011 significantly impacting the Japanese economy and bringing about extremely severe conditions, particularly in the Kanto and Tohoku regions. In such an environment, the Daicel Group continued to work diligently to improve its performance with the aim of achieving another year of increased revenues and earnings. Specifically, we strove to expand sales in China and other emerging countries where demand is robustly growing while advancing our ongoing cost reduction efforts. As a result, the Daicel Group was able to expand net sales by 10.4% year on year due to an increase in sales volume. On the earnings front, we managed an across-the-board increase in income related items over fiscal 2009, owing to contributions from improved facility utilization in line with an increase in sales volume.

This performance improvement was underpinned by initiatives, which were explained in the special feature section of The Daicel Group CSR Report 2010* last

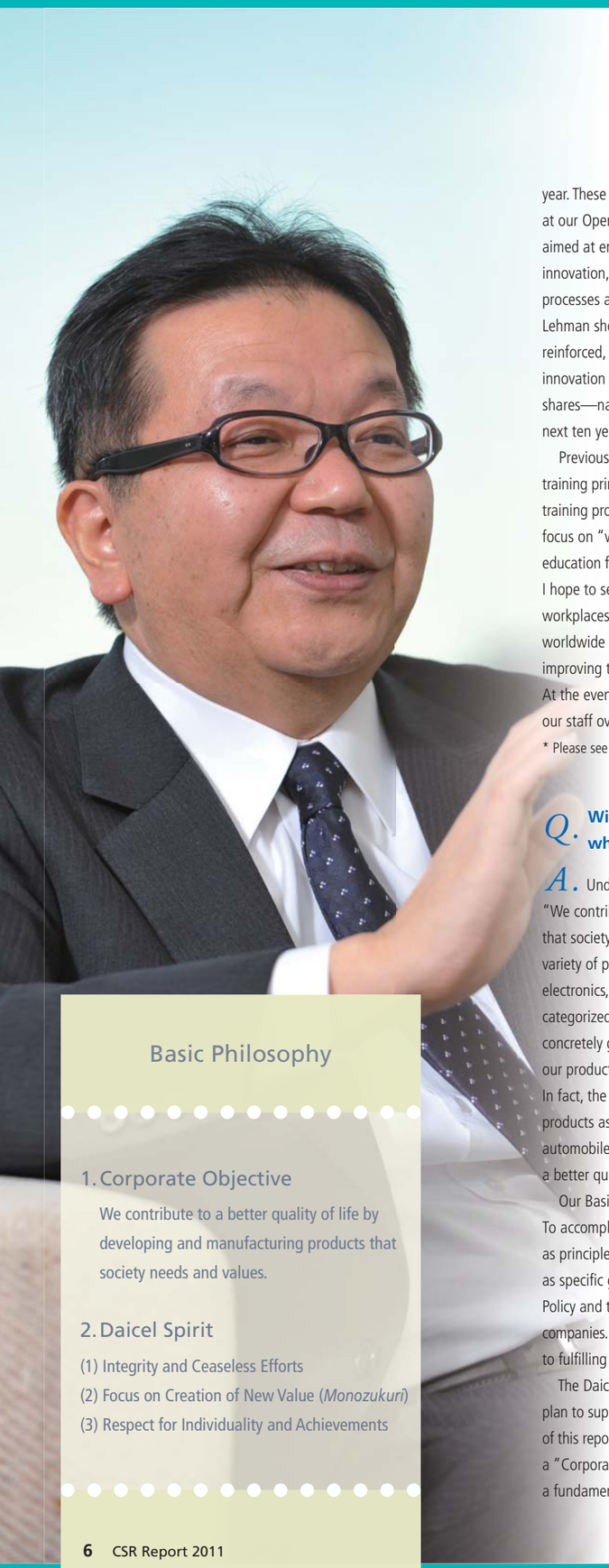
The Daicel Group's CSR

Basic Philosophy, Conduct Policy and Code of Conduct



For the entire Group
The Daicel Group's reason for being and shared sense of values
Principles and criteria to achieve

For each Group company
Specific guidelines to practice



year. These initiatives included our production innovation projects, education programs at our Operation Training Center and activities through the Global KAIZEN Contest aimed at enhancing product quality and productivity. In particular, through production innovation, the Daicel Group has promoted a comprehensive review of its business processes and implemented an array of performance improvement projects after the Lehman shock in 2008. Consequently, our competitiveness has been significantly reinforced, reconfirming the true strengths of the Group. Our efforts in production innovation represent our commitment to one of the values that the entire Group shares—namely, "Integrity and Ceaseless Efforts"—and will be sustained over the next ten years. We are proudly accelerating these efforts.

Previously, at our Operation Training Center, we had provided our personnel with training primarily concerning "how" to do things. From 2011, however, we have started training programs for staff serving as instructors. In these training programs, we plan to focus on "why" we are beginning this new training scheme. By conducting specialized education for many of our engineers, we have been able to steadily improve their skills. I hope to see the impact as they fully exert these enhanced capabilities at their workplaces. Meanwhile, at Global KAIZEN Contest 2010, representatives of our five worldwide major production bases competed with each other with the aim of further improving the quality and productivity of automobile airbag inflator production. At the event, we were pleased to witness significant improvements in the ability of our staff over last year.

* Please see page 12 of The Daicel Group CSR Report 2010 for details.

Q. With much of your operations centering on chemicals, what does CSR mean to the Daicel Group?

A. Under its Basic Philosophy, the Daicel Group upholds the Corporate Objective. "We contribute to a better quality of life by developing and manufacturing products that society needs and values." In line with this objective, the Group is providing a variety of products based on chemicals to wide-ranging industries, such as electric and electronics, automobile and pharmaceuticals. Since many of Group products can be categorized as "intermediate products," it may be difficult for the general public to concretely grasp our products. Page 2 of this report displays some of the many ways our products are used in a gamut of finished products consumers encounter every day. In fact, the Daicel Group commands the world's top-tier market shares of such products as triacetyl cellulose (TAC), chiral columns, polyoxymethylene* (POM) and automobile airbag inflators. Through these and other products, we are contributing to a better quality of life for people the world over.

Our Basic Philosophy expresses the very reason for the Daicel Group's being. To accomplish this philosophy, we have formulated the Daicel Group Conduct Policy as principles and criteria to be achieved by the entire Group and the Code of Conduct as specific guidelines to be practiced at each Group company. Naturally, the Conduct Policy and the Code of Conduct form the foundation of CSR to be pursued by all Group companies. In other words, putting the Basic Philosophy into practice will lead the Group to fulfilling its CSR.

The Daicel Group has established a 10-year, long-term vision and a medium-term plan to support the achievement of this long-term vision. These are described on page 9 of this report. To accomplish both the vision and plan, it will be indispensable to promote a "Corporate Ethics Initiative," which includes complying with laws and regulations as a fundamental conduct for any going concern, throughout our business. Also, we must promote the "Responsible Care Initiative," which is an essential factor in manufacturing activities. Thus, these initiatives are the pillars of the Group's CSR initiatives.

* Also known as polyacetal.

Q. Now we have a better idea about how the Daicel Group pursues CSR. What progress did the Group make in its CSR initiatives during fiscal 2010?

A. Through the Corporate Ethics Initiative, which is explained in more detail on page 32 of this report, individual business divisions undertake their own activities to promote ethics. In addition to these activities, we held seminars for leaders of all ranks, providing explanations and calling attention to: (1) deceptive third-party behavior; (2) antitrust laws and export management; and (3) overtime work and power harassment. Through these seminars, I believe that all participating leaders were able to enhance their knowledge about and insight into these issues.

In the area of the Responsible Care Initiative, which is detailed on page 36 of this report, the Group was able to achieve, as a whole, almost all the targets set for: (1) environmental preservation; (2) process safety and disaster prevention; (3) occupational health and safety; (4) distribution safety; (5) chemical and product safety; and (6) dialogue with society. Still, we need to strengthen our activities to further minimize distribution issues and further reduce emissions of pollutant release and transfer register (PRTR) substances, for which regulations were tightened in fiscal 2010. These have been accordingly incorporated in our targets for fiscal 2011.

Q. How does the Daicel Group approach CSR initiatives?

A. As stated above, practicing our Basic Philosophy is synonymous with implementing our CSR initiatives. In fiscal 2009, Daicel formulated the Grand Vision 2020, which embodies the Basic Philosophy. Under the Grand Vision 2020, a shared sense of values for the entire Daicel Group, which underpins our Basic Philosophy together with our Corporate Objective, is clearly stated. We call this sense of values "the Daicel Spirit," comprising: (1) Integrity and Ceaseless Efforts; (2) Focus on Creation of New Value (*Monozukuri*); and (3) Respect for Individuality and Achievements. Every member of the Daicel Group shares the Daicel Spirit. Among these values, we place the utmost emphasis on "Integrity and Ceaseless Efforts." This means that we approach everything tirelessly and honestly. We strongly believe that such a stance is the basis for everything we do.

From fiscal 2010, the Daicel Group will promote all its businesses in line with its new medium-term plan, which has been formulated based on the "Grand Vision 2020". Looking ahead, we will apply the Daicel Spirit in the implementation of the Corporate Ethics Initiative and the Responsible Care Initiative, which are essential building blocks for our business activities. So, over the period of our new plan, we will take into consideration the results of our activities in fiscal 2010 and put full-fledged efforts into our activities from fiscal 2011 onward, thereby take steps to achieve our targets under the new plan.

Q. What was the background of formulating your long-term "Grand Vision 2020"?

A. Under the Group's Second Long-Term Plan, which ended at the close of fiscal 2009, we prioritized innovation in three strategic areas—products, processes and management—in support of *monozukuri*, or activities that create new value. To that end, Daicel worked to: streamline its production structure; promote its internal company system; ensure that a customer-oriented approach becomes ingrained in our corporate culture; and develop innovative products.

In streamlining its production structure, the Company has established a Daicel Production Innovation method. Through the promotion of the internal company system, aimed at decentralizing its business authority and reforming its decision-making structure, greater integration was realized among R&D, production and sales and marketing divisions, which in turn facilitated speedier operations and brought about substantial

Basic Philosophy

1. Corporate Objective

We contribute to a better quality of life by developing and manufacturing products that society needs and values.

2. Daicel Spirit

(1) Integrity and Ceaseless Efforts
(2) Focus on Creation of New Value (*Monozukuri*)
(3) Respect for Individuality and Achievements

Conduct Policy

We, the Daicel Group, have established the following Conduct Policy in order to realize our Basic Philosophy. Every member of the Daicel Group shall fully understand and voluntarily consider this Conduct Policy and shall put it into practice in a tangible way through their daily activities.

1. We shall not only comply with all laws and regulations but also act with high ethical standards and sound judgment.
2. We shall contribute to the development of society as good corporate citizens.
3. We shall offer safe, high-quality products and services that satisfy and gain the trust of our customers.
4. We shall contribute to the development of local communities by complying with international rules and each country's laws and regulations and by respecting local cultures and customs.
5. We shall willingly and justly disclose reliable corporate information.
6. We shall conduct honest trade in accordance with the basic principles of fair and free competition.
7. We shall work positively to conserve the natural environment and to ensure safety.
8. We shall properly manage corporate assets and information.
9. We shall respect the diversity, personality and individuality of every member of the Daicel Group and shall maintain a healthy and comfortable work environment that is free from discrimination and harassment.

web The Daicel Group Conduct Policy:
www.daicel.com/en/profile/policy.html

web The Daicel Code of Conduct:
www.daicel.com/en/profile/standard.html

Basic Purchasing Policy

The Raw Material Purchasing Center in charge of the purchase of raw materials and the Engineering Center Procurement Group responsible for the purchase of machinery have worked together to formulate the Basic Purchasing Policy. This Basic Purchasing Policy helps the suppliers who provide us with raw materials, equipment and services in the supply chain to better understand Daicel's approach to purchasing, while encouraging them to cooperate with us in fulfilling our CSR throughout our supply chain.

Basic Purchasing Policy

In keeping with courses of action intended to implement the Daicel Group's basic philosophy, we shall comply with the following Basic Purchasing Policy when purchasing from suppliers.

Fair & Rational Transactions

- We provide fair participation opportunities for transactions.
- Our overall considerations are matters of quality, price, stability of supply, technological development capability, environmental consideration and efforts to ensure safety. We consider these aspects in a comprehensive manner based on their economic rationality.
- We conduct our purchasing activities in an open manner with no regard for previous dealings or for whether the provider is located inside or outside Japan.

Legal Compliance, Confidentiality and Information Disclosure

- Our business operations shall be based on legal compliance as well as corporate ethics.
- We strictly protect confidential information gained through businesses, and we never infringe third parties' intellectual property rights.

Establishing a Relationship of Trust

- We strive to establish better partnerships with our suppliers by pursuing mutual economic benefit.

Initiatives based on CSR perspectives

- We promote our CSR Initiatives with the aim of enhancing corporate value for both our suppliers and us.

web www.daicel.com/en/purchase/

improvements in the profitability of individual products.

These activities proved effective, bringing tangible success in various operations. More specifically, Daicel expanded the scale of its cigarette filter acetate tow business through the establishment of a powerful supply chain. The Company realized healthy growth in its engineering plastics and automobile airbag inflator businesses. We also pioneered a new application for LCD optical films in the cellulose acetate business. Furthermore, we advanced the globalization of our chiral businesses. All these outcomes contributed to exceptional business performance in fiscal 2006 and 2007, enabling record net sales and operating income. The Daicel Group was able to achieve a ninth consecutive year of increased operating income.

Nevertheless, in organic functional products and intermediate pharmaceuticals, Daicel failed to instill a corporate culture focusing on a more customer-oriented approach. New product development failed to meet plans. Moreover, the Company has yet to achieve Groupwide restructuring aimed at commercializing its operations in semiconductor photoresist polymers. These will be the next issues we address.

Over the next decade, it will be essential to leverage the collective strengths of the Daicel Group and thereby overcome a number of issues. These include ongoing business globalization, the environment and energy security.

Our "Grand Vision 2020" has been formulated with all of this in mind. The long-term vision continues the principles we upheld under our Second Long-Term Plan. And based on the "Grand Vision 2020", a new medium-term plan was announced in February 2011. This action plan will cover the three years through March 31, 2014.

Q. How do you position your new three-year, medium-term plan in relation to the "Grand Vision 2020"?

A. The new medium-term plan—effective through March 31, 2014—has been positioned as the first step in our long-term plan, dubbed "3D Step-Up Plan" toward the achievement of the "Grand Vision 2020", and has thus been entitled "3D-I."

We provide explanations on "3D-I" on the next page. The key phrase for the "3D-I" medium-term plan is "Design the Future (Design & Initiative)." In line with this key phrase, we will aggressively promote the creation of new businesses, additional growth in our core businesses and the acceleration of global operations over the next three years.

Q. Why are you changing the name of the company from Daicel Chemical Industries, Ltd. to Daicel Corporation?

A. As our business has evolved, we've changed our name accordingly, as the first page of this report makes clear. We started out as Dainippon Celluloid Company Limited in 1919 through the merger of eight producers of celluloid, a plastic material partially made of natural ingredients. Over the ensuing 90 years, we have provided a plethora of products based on core technologies in cellulosic derivatives, organic chemicals, polymer chemicals and gunpowder engineering. In 1979, we changed our corporate name to Daicel Chemical Industries, Ltd., reflecting on Dainippon Celluloid's shorter nickname. Since then, Daicel Chemical Industries has been on our banner.

The coming change will remove "Chemical Industries" from our corporate name. This represents a fundamental change in the nature of our business, as we move beyond chemistry. Daicel Corporation better captures the essence of our company as

(1) Assembly operations grow into a core business for automobile airbag inflators and other products
(2) New business creation accelerates with the aim of developing into a company that proudly delivers the best solutions to the global market.

In other words, the corporate name change expresses our strong intention to continue expanding beyond the chemical industry through the application of proprietary technology and expertise based on chemistry.

Becoming a Company That Delivers the Best Solutions

Management Targets

1. FY2013 consolidated performance:
   Net sales ¥420.0 billion
   Operating income ¥45.0 billion
2. Accelerate the creation of new businesses

Action Plans

1. Create new businesses

- Establish new businesses through our operations in
  - ➤ Functional chemical products for the electronics and information equipment fields
  - ➤ Functional films for the display devices field
- Form new business units in growth fields, including medical and healthcare, the environment and energy

2. Further strengthen core businesses

Cellulosic Derivatives

- Enhance operations in triacetyl cellulose (TAC) through R&D for optical display materials and peripheral areas
- Increase production capacity for cigarette filter acetate tows

Organic Chemicals

- Strengthen the Group's acetyl and ethanol chains
- Reinforce peracetic acid operations in the functional polymer business and establish necessary frameworks
- Promote the globalization of the chiral columns business

Plastics and Films

- Expand engineering plastics business sales in China, India and other emerging countries and launch products in such growth areas as environmental protection, energy, safety and security
- Strengthen the compound plastics business centered in China
- Identify ways to develop the plastic processing business in the Asian market and create highly functional products through Groupwide cooperation

Pyrotechnic Devices

- Expand sales of automobile airbag inflators in China and other emerging countries. Work to increase transactions with overseas automakers
- Develop new safety devices based on pyrotechnic device technologies
- Target the private sector with new businesses based on system development technologies nurtured through operations in defense systems

Membranes

- Expand operations in the equipment, system and maintenance businesses in China and other countries

3. Strengthen Cost Competitiveness

Strategically meet intensifying global competition despite rising raw material prices and yen appreciation

4. Expand and Reinforce Global Business Development

Accelerate business in fast growing economies, such as China and India, to work toward an overseas sales ratio of 45% in fiscal 2013

5. Enhance Collaboration with Business Partners

Work closely to create new businesses and further bolster core businesses

6. Utilize Strategic M&A

Identify strategic M&A initiatives amounting to ¥100.0 billion over the three years

7. Further Solidify the Business Foundation

Reduce costs by ¥6.0 billion (compared with fiscal 2009)
Reduce energy consumption rates by more than 1% every year

Important Management Indicators

Under the previous Second Long-Term Plan, the Daicel Group prioritized return on assets (ROA)* with the aim of improving Groupwide asset efficiency and maximizing cash flows. Under the 3D-I medium-term plan, however, return on equity (ROE)** will become a chief priority. ROE represents how efficiently we are utilizing the capital entrusted by our shareholders. Accordingly, we have set an ROE target for fiscal 2013 at 10%.

*ROA: The ratio of ordinary income to total assets
**ROE: The ratio of net income to shareholders' equity

Return to Shareholders

Daicel's basic dividend policy, from a comprehensive and long-term perspective, is to distribute profits in a balanced manner, taking into consideration a stable and sustainable shareholder return that is in line with the Company's consolidated financial results in each fiscal year. This policy will not change. To complement dividend payments, the Company may utilize share buybacks* as another means to return value to shareholders. With regard to our shareholder return ratio (total amount of dividends and buybacks divided by consolidated net income for the year), we have set a target of 30% for fiscal 2013, ending March 31, 2014.

*Buybacks reduce the number of shares outstanding as the Company acquires treasury stock.

About the Daicel Group

Outline of the Daicel Group

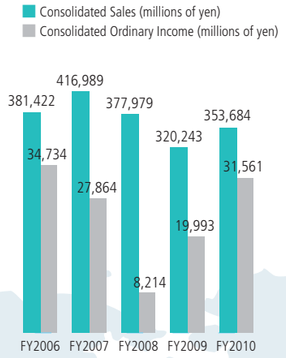
The Daicel Group includes Daicel Chemical Industries, Ltd., its 55 subsidiaries, and 11 affiliated companies. The Company's primary business is the manufacture and sales of cellulosic derivatives, organic chemicals, plastics and films, pyrotechnic devices and other products. The business segments of Daicel Chemical Industries, Ltd., its subsidiaries, and affiliated companies are shown below.

Daicel Chemical Industries, Ltd.

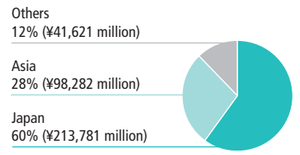
(as of March 31, 2011)

Incorporated:	September 8, 1919
Paid-in capital:	¥36,275,440,089
Number of shares issued:	364,942,682

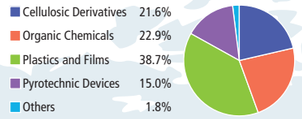
Sales and Ordinary Income



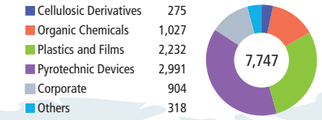
Sales by Region



Sales by Segment

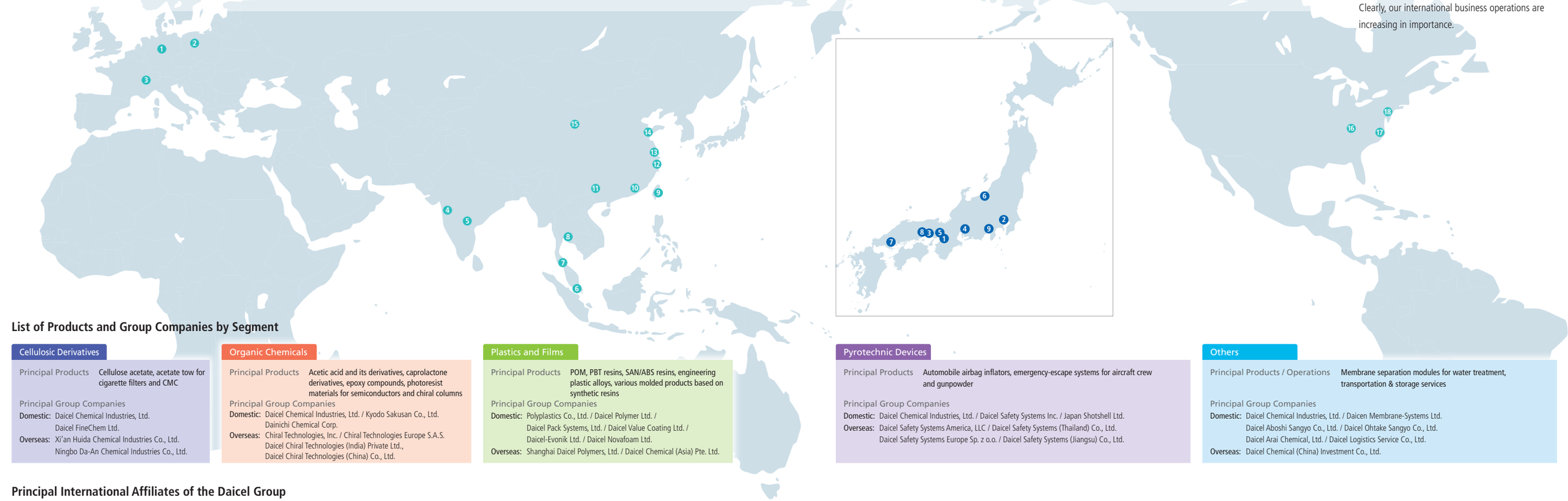


Number of Employees by Segment



Global Network

The Daicel Group has continued its global expansion since Daicel (U.S.A.), Inc., our first international affiliate, was established in Los Angeles in 1984. The Group now lists 37 overseas affiliates. For the fiscal year ended March 31, 2011, overseas sales totaled ¥139.9 billion, which represented a large percentage—40.0%—of total consolidated sales. Clearly, our international business operations are increasing in importance.



List of Products and Group Companies by Segment

Cellulosic Derivatives

Principal Products: Cellulose acetate, acetate tow for cigarette filters and CMC

Principal Group Companies

Domestic: Daicel Chemical Industries, Ltd.
Daicel FineChem Ltd.

Overseas: Xi'an Huida Chemical Industries Co., Ltd.
Ningbo Da-An Chemical Industries Co., Ltd.

Organic Chemicals

Principal Products: Acetic acid and its derivatives, caprolactone derivatives, epoxy compounds, photoresist materials for semiconductors and chiral columns

Principal Group Companies

Domestic: Daicel Chemical Industries, Ltd. / Kyodo Sakusan Co., Ltd.
Dainichi Chemical Corp.

Overseas: Chiral Technologies, Inc. / Chiral Technologies Europe S.A.S.
Daicel Chiral Technologies (India) Private Ltd.,
Daicel Chiral Technologies (China) Co., Ltd.

Plastics and Films

Principal Products: POM, PBT resins, SAN/ABS resins, engineering plastic alloys, various molded products based on synthetic resins

Principal Group Companies

Domestic: Polyplastics Co., Ltd. / Daicel Polymer Ltd. /
Daicel Pack Systems, Ltd. / Daicel Value Coating Ltd. /
Daicel-Evonik Ltd. / Daicel Novafoam Ltd.

Overseas: Shanghai Daicel Polymers, Ltd. / Daicel Chemical (Asia) Pte. Ltd.

Pyrotechnic Devices

Principal Products: Automobile airbag inflators, emergency-escape systems for aircraft crew and gunpowder

Principal Group Companies

Domestic: Daicel Chemical Industries, Ltd. / Daicel Safety Systems Inc. / Japan Shotshell Ltd.

Overseas: Daicel Safety Systems America, LLC / Daicel Safety Systems (Thailand) Co., Ltd.
Daicel Safety Systems Europe Sp. z o.o. / Daicel Safety Systems (Jiangsu) Co., Ltd.

Others

Principal Products / Operations: Membrane separation modules for water treatment, transportation & storage services

Principal Group Companies

Domestic: Daicel Chemical Industries, Ltd. / Daicen Membrane-Systems Ltd.
Daicel Aboshi Sangyo Co., Ltd. / Daicel Ohtake Sangyo Co., Ltd.
Daicel Arai Chemical, Ltd. / Daicel Logistics Service Co., Ltd.

Overseas: Daicel Chemical (China) Investment Co., Ltd.

Principal International Affiliates of the Daicel Group

Germany

1 **Daicel (Europa) GmbH:** Purchase and sales of products in the European market

Topas Advanced Polymers GmbH: Production, sales and research on cyclic olefin copolymer

Poland

2 **Daicel Safety Systems Europe Sp. z o. o.:** Manufacture and sales of automobile airbag inflators

France

3 **Chiral Technologies Europe S.A.S.:** Sales of chiral columns and provision of chromatographic enantioselective separation services on consignment

India

4 **Polyplastics Marketing (India) Private Ltd.:** Sales of engineering plastic products

5 **Daicel Chiral Technologies (India) Pvt. Ltd.:** Sales of chiral columns and technical services for chiral businesses

Singapore

6 **Daicel Chemical (Asia) Pte. Ltd.:** Purchase and sales of products in Asian markets

Polyplastics Asia Pacific Singapore Pte. Ltd.: Sales of engineering plastics

Malaysia

7 **Polyplastics Asia Pacific Sdn. Bhd.:** Manufacture and sales of engineering plastics

Thailand

8 **Daicel Safety Systems (Thailand) Co., Ltd.:** Manufacture and sales of automobile airbag inflators

Polyplastics Marketing (T) Ltd.: Sales of engineering plastics

Taiwan

9 **Polyplastics Taiwan Co., Ltd.:** Manufacture and sales of engineering plastics

Hong Kong

10 **Daicel Polymer (Hong Kong) Ltd.:** Sales of flame-resistant ABS, ABS alloys and other products

Polyplastics (China) Ltd.: Sales of engineering plastics

Guangxi, China

11 **Daicel Nanning Food Ingredients Co., Ltd.:** Manufacture and sales of sorbic acid and potassium sorbate

Zhejiang, China

12 **Ningbo Da-An Chemical Industries Co., Ltd.:** Manufacture and sales of cellulose acetate and acetic anhydride

Shanghai, China

13 **Daicel Chemical (China) Investment Co., Ltd.:** Hub of the production and sales organization in China

Shanghai Daicel Polymers, Ltd.: Manufacture and sales of flame-resistant ABS, ABS alloys, etc.

Daicel Trading (Shanghai) Ltd.: Purchase and sales of products in the Chinese market

Polyplastics Trading (Shanghai) Ltd.: Sales of engineering plastics

Polyplastics (Shanghai) Ltd.: Sales of engineering plastics

Daicel Chiral Technologies (China) Co., Ltd.: Sales of chiral columns and technical services for chiral businesses

Shanghai Da-shen Cellulose Plastics Co., Ltd.: Production and sales of celluloid and acetate plastic sheet

Jiangsu Province, China

14 **Daicel Safety Systems (Jiangsu) Co., Ltd.:** Manufacture and sales of automobile airbag inflators

PTM Engineering Plastics (Nantong) Co., Ltd.: Manufacture and sales of engineering plastics

Shaanxi Province, China

15 **Xi'an Huida Chemical Industries Co., Ltd.:** Manufacture and sales of acetate tow for cigarette filters

Kentucky, U.S.A.

16 **Daicel Safety Systems America, LLC:** Manufacture and sales of automobile airbag inflators

Topas Advanced Polymers, Inc.: Sales of cyclic olefin copolymer

Pennsylvania, U.S.A.

17 **Chiral Technologies, Inc.:** Sales of chiral columns and technical services for chiral businesses

New Jersey, U.S.A.

18 **Daicel (U.S.A.), Inc.:** Purchase and sales of products in the U.S. market

Principal Domestic Locations

1 **Osaka Head Office:** Mainichi Intecio, 4-5, Umeda 3-chome, Kita-ku, Osaka 530-0001

2 **Tokyo Head Office:** JR Shinagawa East Bldg., 2-18-1, Konan, Minato-ku, Tokyo 108-8230

3 **Himeji Technology Head Office:** 1239, Shinzaike, Aboshi-ku, Himeji-shi, Hyogo 671-1281

Himeji Production Sector / Aboshi Plant: 1239, Shinzaike, Aboshi-ku, Himeji-shi, Hyogo 671-1281

Principal products: Acetic acid, cellulose acetate, acetate tow, CMC, HEC

Himeji Production Sector / Hirohata Plant: 12, Fuji-cho, Hirohata-ku, Himeji-shi, Hyogo 671-1123

Principal products: PS sheet, SAN resins

Harima Plant: 805, Umaba, Ibogawa-cho, Tatsuno-shi, Hyogo 671-1681

Principal products: Automobile airbag inflators, pilot emergency-escape systems, rocket propellants, gunpowder

Central Research Center: 1239, Shinzaike, Aboshi-ku, Himeji-shi, Hyogo 671-1283

4 **Nagoya Sales Office:** Meiffice-Meieki Bldg., 26-25, Meieki 4-chome, Nakamura-ku, Nagoya-shi, Aichi 450-0002

5 **Kanzaki Plant:** 12-1, Kanzaki-cho, Amagasaki-shi, Hyogo 661-0964

Principal products: Packaging films, adhesive films

High Performance Film Development Center

6 **Arai Plant:** 1-1, Shinko-cho, Myoko-shi, Niigata 944-8550

Principal products: Ketene derivatives, active ingredients and intermediates for pharmaceuticals and agrochemicals, chiral columns, synthetic resin emulsions

Green Product Development Center

7 **Ohtake Plant:** 1-4, Higashisakae 2-chome, Otake-shi, Hiroshima 739-0695

Principal products: Ethyl acetate, 1,3-butylene glycol, butyl acetate, caprolactone, acetate tow, cellulose acetate

8 **H.R. Training Center:** 14-1, Kouto 3-chome, Kamigori-cho, Akou-gun, Hyogo 678-1205

9 **Polyplastics Co., Ltd. / Fuji Plant:** 973, Miyajima, Fuji-shi, Shizuoka 416-8533

Principal products: POM, PBT, LCP

Chronology of the Daicel Group

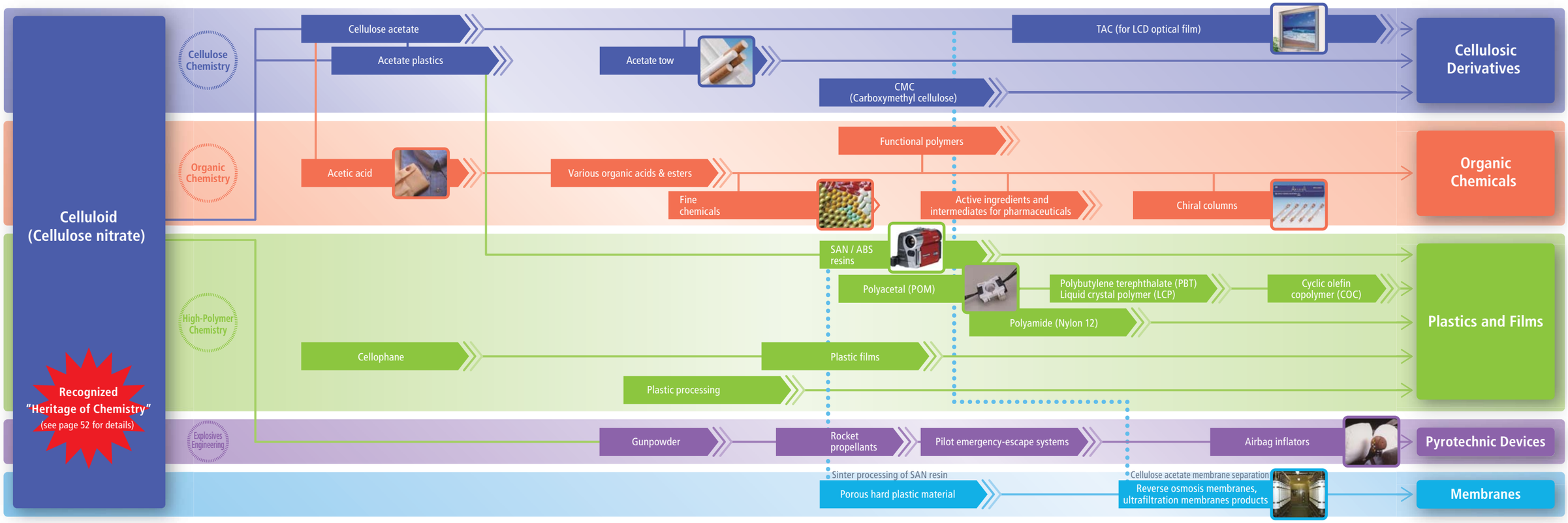
The Daicel Group has its roots in Dainippon Celluloid Co., Ltd., which was established in 1919 through the merger of eight celluloid producers. Today, the Group specializes in the manufacture and sales of a wide variety of chemical products.

Since our earliest days, we led the industry in the quality and volume of the celluloid we produce, while engaging in research and development on natural, high-polymer resins, which would eventually replace celluloid. In 1929, we succeeded in the development of acetate plastics, and in 1935, we took a bold step to commercialize cellulose acetate. In doing so, we decided to produce acetic acid—a raw material of cellulose acetate—in-house from carbide. This decision led to the handling of acetic acid derivatives products as well, and with this significant step we entered the organic chemicals field.

With the emergence of the petrochemical boom in the 1960s, we began participation in a petrochemical complex project, and in 1964, we established Polyplastics Co., Ltd. through a joint venture and, accordingly, launched an engineering plastics business. Meanwhile, ascertaining the fact that celluloid serves as a raw material for gunpowder, we entered the pyrotechnic devices business that provides gunpowder and other products. This segment eventually bore fruit with the development of automobile airbag inflators.

With the onset of the first oil crisis, we strove to promote decreased dependence on petroleum-based raw materials through such means as using methanol produced from natural gas in the manufacture of acetic acid. In recent years, with an eye on the establishment of a sustainable chemical industry, we are increasing the use of bioethanol. In line with such environmental efforts, an ethylamine plant and an ethyl acetate plant began commercial production in 2007 and 2009, respectively.

Today, the Daicel Group's four flagship businesses encompass cellulosic derivatives, organic chemicals, plastics and films, and pyrotechnic devices. Through these businesses, the Company has attained high global market shares for such products as triacetyl cellulose (TAC) for use as a raw material of films for liquid crystal displays, chiral columns, polyacetal (POM) and automobile airbag inflators. Through the provision of these and many other products, we are contributing to the development of society.



1908

History before Establishment of the Company: Sakai Celluloid Company and Japan Celluloid Jinzo Kenshi Co., Ltd. are established.
Company establishment: Dainippon Celluloid Company Limited is established in 1919 through merger of eight celluloid producers. Plants are established in Sakai, Kanzaki, Aboshi and Tokyo.

- Games of the IV Olympiad are held.
- The end of the First World War leads to a postwar recession.

1920

Amid a severe economic climate, the company undertakes research on photographic films as a successor to the celluloid business.

- The Great Kanto Earthquake strikes (1923).
- The crash of the New York Stock Exchange triggers a global depression (1929).

1930

Fuji Photo Film Co., Ltd. (currently FUJIFILM Corporation) is established and is spun off as a photographic film business. The Company begins integrated production of cellulose acetate from its raw material, acetic acid, as part of a research project undertaken soon after the company's establishment.

- World War II breaks out (1939).

1940

The entire plant focuses on production of materials for the war effort, and some plants are damaged. After the war, plants that remain free from damage return to production of civilian goods. The Company overcomes the challenges of designated compensation payments and a crisis involving a call for the breakup of the company.

- World War II ends (1945).

1950

The business of acetate tow for cigarette filters begins full-scale production. Cellulose acetate replaces cellulose nitrate as the base for photographic film, which renders film incombustible. Synthetic high-polymer plastics are introduced, and demand for celluloid declines.

- Japan signs a peace treaty and regains its independence (1951).
- TV broadcasting begins (1953).
- Japan's first petrochemical complex opens in Iwakuni (1958).

1960

With the rise of the petrochemical industry, Daicel becomes a member of the Iwakuni-Ohtake petrochemical complex and enters the petrochemical business. The high-polymer business is expanded through the establishment of Polyplastics Co., Ltd.

- The Japanese economy enters a period of rapid growth.
- The Tokaido Bullet Train line opens (1964).
- The Tokyo Olympics are held (1964).
- The first manned moon landing takes place (1969).

1970

Excessive competition emerges in the petrochemical industry, resulting in low revenues, and 20% of employees accept an offer of voluntary retirement. The oil crisis dampens economic growth and the cellophane business undergoes reorganization.

- Expo 70 is held in Japan (1970).
- Okinawa is returned to Japanese control (1972).
- The first oil crisis occurs (1973).

1980

The use of non-petroleum-based raw materials is promoted as the manufacture of products using acetic acid from the methanol carbonylation process is expanded. A foundation for the production of functional chemicals and fine chemicals is created. The Company enters the automobile airbag inflator business in earnest.

- The Equal Employment Opportunity Law is enacted (1986).
- The Japanese economy enters the "bubble" phase.

1990

The Responsible Care Initiative is introduced. The Company enters the chiral chromatography business in earnest. The development of functional chemicals and fine chemicals is promoted. Domestic production of acetate tow for cigarette filters is increased and offshore production in China is begun.

- End of the Cold War.
- The Great Hanshin Earthquake strikes (1995).

2000 – 2011

The Integrated Production Center is completed in the Aboshi Plant. The automobile airbag inflator business is launched internationally, starting in the U.S.A. Cellulose acetate production is begun in China. In Japan, manufacturing facilities for cigarette filter tow and cellulose acetate, along with a circulation fluidized bed boiler, are installed at the Ohtake Plant.

- Japan and Korea jointly host the World Cup of Soccer (2002).
- The Kyoto Protocol comes into force (2005).
- Great East Japan Earthquake (2011)
- Economic growth accelerates in the EU and BRIC nations.

Special Feature

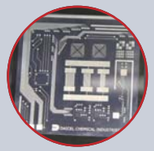
Growing into a Company That Proudly Delivers the Best Solutions to the Global Market

Daicel Group R&D: *"Design the Future"*

R&D Topic File 01

Beautifully Protecting LEDs: "CELVENUS™"

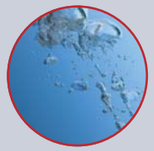
—Provision of best solutions worldwide through integrated production beginning with raw materials



R&D Topic File 02

One-Stop Solutions for the Printable Electronics Field

—Developing silver nano ink, crystallization of long-nurtured chemical expertise



R&D Topic File 03

Securing Safe Water: Membranes Business

—Expanding business globally through strengths in cellulose-acetate based water treatment membranes

R&D Topic File 04

Replacing Metal with Plastic: Long-Fiber Reinforced "PLASTRON™" Plastics

—Contributing to fuel efficiency through kilogram-level weight reduction in automotive components

R&D Topic File 05

Titanium Oxide Photocatalyst Responding to Visible Light to Improve Living Environments

—Realizing VOC decomposition at normal light intensity

R&D Topic File 06

R&D for Eco-Friendly Chemical Products Based on Biomass Raw Materials

—Tackling eco-friendly chemistry through biocatalysts and chemical catalysts

Proactively tackling challenges, the Daicel Group produces tangible outcomes in R&D activities.

Yasunori Iwai

Executive Officer, General Manager of Central Research Center,
Daicel Chemical Industries, Ltd.

The R&D activities of the Daicel Group broadly fall into two categories. Group companies undertake R&D in line with their business strategies. On the other hand, corporate R&D activities promote new growth fields through the application of the Group's fundamental technologies.

Under our new medium-term plan, we have identified the creation of new businesses as a major management target for the entire Group. The creation of new business—a principal responsibility given to corporate R&D—requires the integration of marketing capabilities and production technologies held by Group companies. By integrating corporate R&D with that performed at Group companies, we are working to achieve efficient, market-oriented R&D.

As the executive officer in charge of the Group's R&D activities, I seek to keep our researcher team motivated. I always exhort, urge and even plead that they:

- "Never stop at discussion. Produce tangible results."
- "Never be satisfied with the present. Keep taking on new challenges."

I have taken such a stance because the technological assets of manufacturers can only be presented in physical products and processes (facilities). By continuing to enhance our products and processes, we can create proprietary technologies that overwhelm our competitors.

Over the past several years, the Daicel Group has strengthened initiatives aimed at creating new businesses. Thanks to such efforts, we have started to see some new "buds" of business gradually forming, not only in our core and related businesses, but also in new business fields for the Group.

To nurture the growth of these buds and establish these businesses as business pillars, I will maintain our passion for R&D, motivating myself and our team, by adhering to the principle of producing tangible outcomes through R&D. In addition, I will keep developing, restructuring and fine tuning with the goal of optimizing the Central Research Center, which performs R&D with world-class sophistication.

In this special feature, we introduce some of the Group's recent R&D themes in growth fields, namely: (1) LED encapsulants; (2) silver (Ag) nano ink; (3) water treatment membranes; (4) long fiber-reinforced plastics; (5) titanium oxide photocatalyst; and (6) biomass-based chemical products.

These materials and products described in this special feature help people lead more affluent lives. At the same time, they are based on environment-friendly technologies—an area of focus under the medium-term plan.

Daicel Group researchers welcome the challenges of advancing new technologies, through the entire process: from setting up theoretical hypothesis to evaluation, and market study. We could not be more satisfied if, upon reading the following articles, you can picture our researchers diligently tackling the ambitious goals of creating technologies, materials and products that provide the best solutions in society.

R&D Topic File 01

Beautifully Protecting LEDs: "CELVENUS™"

—Provision of best solutions worldwide through integrated production beginning with raw materials

"CELVENUS™" Series for All Types of LEDs

Marketed under the CELVENUS™ brand, Daicel's extensive lineup of encapsulants is used to protect a full range of light-emitting diodes (LEDs). LEDs are classified according to their luminance. The CELVENUS™ W Series*1 is the best choice for applications requiring standard luminance. These include traffic lights, digital displays on bullet trains, baseball stadium scoreboards and large screen displays at racetracks.

On the other hand, high-luminance LEDs are required to meet rapidly growing global demand for LCD backlights and LED lighting. For these applications, Daicel offers the CELVENUS™ T Series.*2 The T Series boasts heat resistance up to 180 degrees Celsius, an improvement on the 150 degrees Celsius limit of silicon-based encapsulants, which command the largest share of the market today. Also, the T Series exhibits superior gas barrier properties, effectively preventing the penetration of nitrogen oxides (NOx) and sulfur oxides (SOx) into LEDs. This feature protects silver plating on LED electrodes against discoloration, which in turn prevents the reduction of LED luminance.

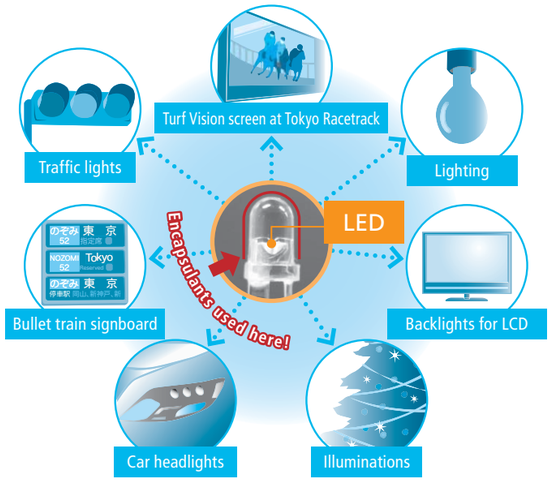
In addition, Daicel has developed the CELVENUS™ H Series of encapsulants for use in organic light-emitting displays (OLEDs). Providing outstanding protection against steam, the H Series is suitable for edge and gap sealing.

Beginning with raw materials, Daicel conducts the integrated production of these encapsulants—a business model only possible for a chemical company. Thanks to this business model, we are able to provide best solutions meticulously tailored to the application and the needs of individual customers, thus ensuring our encapsulants protect LEDs beautifully. Daicel's capability to consistently offer such solutions has been highly recognized by customers worldwide.

*1 The W Series is based on CELLOXIDE™, a cycloaliphatic epoxy compound developed by Daicel, which also boasts the top global market share in peracetic acid derivatives.
*2 The T Series is based on non-epoxy compounds.

The Roles of LED Encapsulants

Clear and colorless LED encapsulants are required to achieve: (1) optical transparency to maintain the intensity of light emitted by LEDs; (2) irradiation and heat resistance to prevent discoloration and alternation; (3) crack-resistance to prevent cracks attributable to changes in ambient temperatures; and (4) gas barrier properties to protect LEDs from various gasses and moisture in the air.



Voice

Koichi Okumura

General Manager, Performance Materials Marketing & Development, Organic Chemical Products Company, Daicel Chemical Industries, Ltd.

Q. When did Daicel start the LED encapsulant business?

A. It was about 30 years ago, Daicel began supplying cycloaliphatic epoxy compounds to electric materials manufacturers as raw materials for their products. Around 1985, red LEDs were first used in the rear-window brake lights of automobiles. In line with this new LED application, Daicel commenced the full-scale promotion of heat- and irradiation-resistant cycloaliphatic epoxy compounds as raw materials for LED encapsulants. Later, we launched R&D for encapsulants in 2005, and for LED encapsulants for LCD TVs and LED Lighting in 2008.

Q. What are the advantages of Daicel's LED encapsulants?

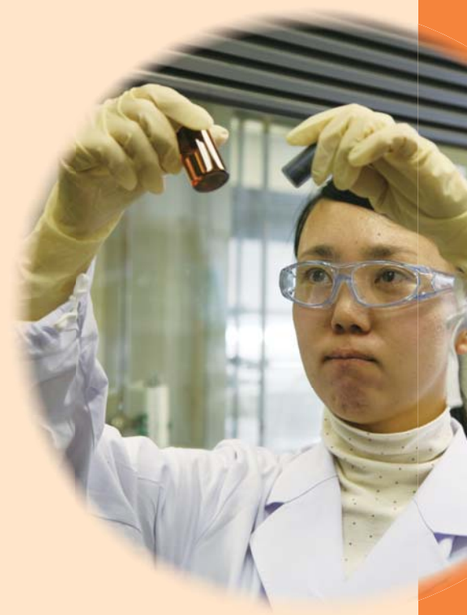
A. Ever since we started supplying raw materials to encapsulant manufacturers, we have always adhered to the production of high-purity cycloaliphatic epoxy compounds. As a result, Daicel has received high praise from customers. We hear things like "It absolutely has to be Daicel's epoxy compounds for our LED encapsulants." Today, we are working to achieve even higher purity in the raw materials we use in our encapsulants. We can proudly say that the cycloaliphatic epoxy compounds we make today are higher quality than ever in over 30 years of history. We can also say that such technological advances have been possible because we are a chemical company.

Q. Can we hear your thoughts about the requirements for LED encapsulants in the future?

A. Take TVs for example. Today, global cost competition is ever intensifying among TV manufacturers, and, accordingly, their efforts are directed toward reducing the number of LEDs mounted on their products. Still, they cannot allow the reduction in the brightness of their display products. This means that each LED must have higher luminance than before. So, in my opinion, there will be greater demand for encapsulants that enable the higher luminance and longer service life of LEDs.

Q. What are Daicel's future goals in R&D for LED encapsulants?

A. We have faced a number of challenges in R&D for encapsulants for high-luminance LEDs. For example, to maintain the service life of LEDs at a certain level, we worked to improve the durability of our encapsulants. This endeavor alone caused extreme difficulties, and we had to continue experimenting. After overcoming such difficulties, our LED encapsulants have been used by many manufacturers throughout the world, and we have been able to bring satisfaction to these customers. Indeed, customer satisfaction is the fuel for our R&D activities. In other words, customer satisfaction provides added impetus for us to overcome future R&D difficulties. Therefore, we will always think of what the best solutions are for our customers. By offering such solutions, Daicel aims to become the global leader in LED encapsulants.



R&D Topic File 02

One-Stop Solutions for the Printable Electronics Field

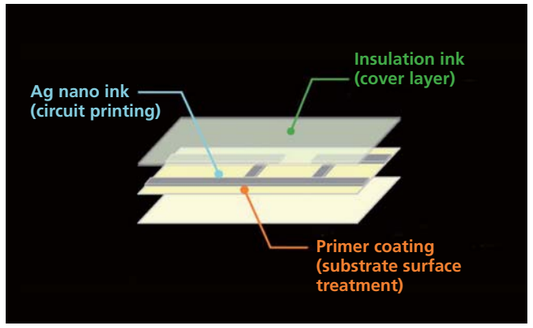
—Developing silver (Ag) nano ink, crystallization of long-nurtured chemical expertise

Printable Electronics Bring Dramatic Innovation to the Manufacture of Electronic Devices

Printable electronics refers to electronic products manufactured through the process of creating electronic circuits using printing technologies. Compared with the conventional subtractive process,*1 the printable electronics process enables the continuous, roll-to-roll*2 manufacture of electronic circuits. Accordingly, the printable electronics process is increasingly viewed as: (1) a next-generation technology that improves flexibility, lowers costs and reduces the weight of electronic devices; and (2) an eco-friendly technology that helps reduce energy consumption due to lower temperature requirements in the manufacturing processes. Specifically, this innovative process is expected to lead to manufacturing breakthroughs for many electronic devices, including thin-film displays, electronic paper and organic electroluminescence (EL) lighting.

Recognizing these advantages, Daicel has advanced R&D activities for silver (Ag) nano ink, which replaces copper foils that have been traditionally used for producing electronic circuits. In addition, we have promoted the development of primer coating and insulation ink, which are peripheral materials required to guarantee the performance of electronic circuits based on Ag nano ink.

Composition of Daicel's Printable Electronics Materials



Daicel's Printable Electronics Materials Providing One-Stop Solutions

1. Ag Nano Ink (Circuit Printing)

Ag nano ink is a conductive ink for fine circuitry. In this ink, Ag nano particles, measuring 10 nanometers in diameter, are interspersed without being aggregated. Through a sintering process, these Ag nano particles are aggregated, and the resultant circuits realize superior conductivity. Ag nano ink provides other advantages, such as: (1) enabling low-temperature sintering; (2) boasting low specific electrical resistance; and (3) offering long-term ink stability.

2. Primer Coating (Substrate Surface Treatment)

Primer coating helps Ag nano ink to fixate on substrates for greater adhesion.

3. Insulation Ink (Cover Layer)

Boasting high volume resistivity,*3 insulation ink adds electromigration*4 resistance to electronic circuits based on Ag nano ink.

*1 The subtractive process creates electronic circuit patterns by selectively removing copper foil on substrates.
*2 An efficient method of manufacturing electronic devices. For example, circuit patterns are continuously printed on a roll of plastic substrate, measuring several hundred meters in length and one meter in width. Then, a laminating film is attached on the printed substrate, and the laminated printed substrate is rolled again for finish.
*3 Electrical resistance per unit of volume. Although volume resistivity is specific to each substance, it fluctuates in line with the temperature of the substance. Metals, a conductor, present higher volume resistivity at higher temperatures, while semiconductors and insulators show lower volume resistivity at higher temperatures.
*4 A phenomenon where a metal used as circuits or electrodes moves on insulators. Electromigration causes insulation failure.

Voice

Kazuki Okamoto
Researcher,
Corporate Research Center,
Research & Development Management,
Daicel Chemical Industries, Ltd.

Q. In the development of this Ag nano ink, what was your primary focus?

A. To improve the general versatility of Ag nano ink for use with electronic substrates, the market was increasingly demanding materials that achieve high conductivity after sintering at lower temperatures. R&D for concentration of Ag nano particles was promoted by other companies. So, to differentiate ourselves from competitors, we focused on the careful selection of technologies to use to achieve both ink stability and high conductivity through low-temperature sintering.

Q. What was particularly difficult? Did you take any creative measures in particular?

A. The development of this Ag nano ink was not based on what Daicel was capable of at the time. Instead, it was based on the needs in the market. There were no particular instances of Daicel handling silver, an inorganic material. In addition, I had no experience in handling this material. So, in the development of this ink, it felt like I was starting everything from scratch. More specifically, I had to begin with the acquisition of basic knowledge. Then, I applied acquired knowledge in R&D processes that I am already familiar with. I purposely avoided referring to the R&D schemes of competitors because I thought it might prevent my own imagination from going beyond theirs.

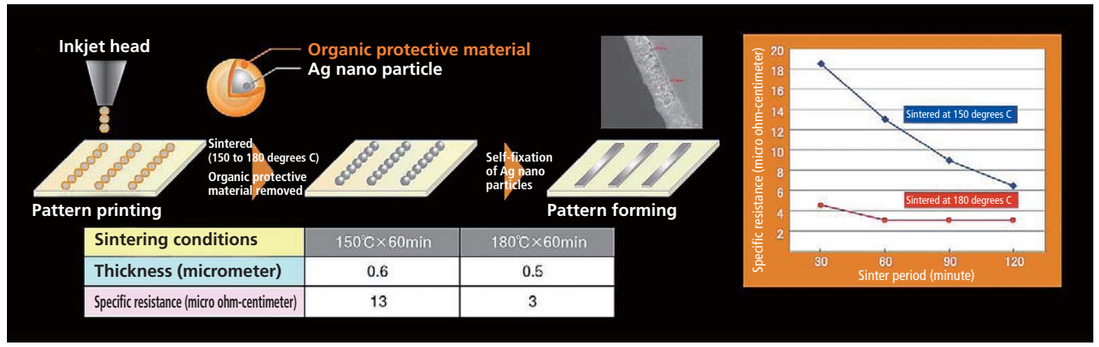
Q. Did you have any specific challenging issues?

A. First of all, we had to achieve ink stability by interspersing 10-nanometer Ag particles and preventing them from coagulating. Moreover, we had to realize high conductivity after sintering at 150 degrees Celsius. Balancing these two contradictory requirements—ink stability and low-temperature sintering—was especially difficult to accomplish. Fortunately, by applying Daicel's advanced chemical approach in material design, we were able to overcome this problem. However, throughout the entire R&D process, we encountered a number of cases where Ag particles coagulated leaving glittering silver plates on the sampling trays. We were shocked and shattered every time we saw this. Still, we continued patiently with hypothesis testing to improve our Ag nano ink.

Q. Can we hear about Daicel's prospects in printable electronics?

A. The printable electronics field has yet to see the full-fledged formation and expansion of market. We are really encouraged with the opportunities we have in getting involved in the latest technologies in this field. So, we would like to contribute to the growth of the printable electronics market through our technologies. Our current Ag nano ink requires sintering at 150 to 180 degrees Celsius. This allowable temperature range has been set based on the assumption for using substrates made from polyethylene terephthalate (PET). Looking ahead, we aim to create Ag nano ink that realizes high conductivity after sintering at even lower temperatures. Also, through R&D to create Ag nano ink with better characteristics, I would like to grow as an independent researcher that can overcome difficulty.

Formation of Circuit Patterns Using Ag Nano Ink



Sintering conditions	150℃×60min	180℃×60min
Thickness (micrometer)	0.6	0.5
Specific resistance (micro ohm-centimeter)	13	3

R&D Topic File 03

Securing Safe Water: Membranes Business

—Expanding business through strengths in cellulose acetate-based water treatment membranes

Overview of the Membrane Business

Water treatment systems of Daicen Membrane-Systems Ltd. are used in a variety of fields.

Water treatment plants
Through sophisticated treatment processes, safe and clean water is created.

Medical and bio industries
Enzymes and pharmaceuticals are separated, refined and concentrated through advanced processing.

Food industry
Viruses are eliminated, and safe mineral water is created.

Sewage treatment plants
Membrane diffusers realize high-efficiency, energy-saving aeration.

Groundwater/seawater treatment
Groundwater and industrial water are treated to create safe drinking water.

Environmental protection
Air-conditioner outdoor unit sprinkler systems reduce power consumption and CO_2 emissions.

Medical industry
Pure water for dialysis treatment is created.

Wastewater treatment
Activated sludge treatment using a membrane separation method is performed for human and other waste.

Cellulose Acetate-Based Membranes Suitable for Water Treatment

The prevalent method of water treatment at water treatment plants uses the coagulation, sedimentation and filtration processes. This method, however, cannot completely eliminate pathogenic microorganisms measuring five micrometers or less. Also, from the perspective of disaster prevention, establishing more compact, decentralized water treatment plants has become an urgent societal issue. Daicen Membrane-Systems Ltd. provides best solutions for this and other related issues through its water treatment systems.

Membranes determine the performance of water treatment systems. In water treatment, membranes must be free of clogging caused by impurities and, at the same time, must maintain minimum filter flow rates when treating water from rivers, lakes and other natural sources. The material that can satisfy these requirements is cellulose acetate, a product for which Daicel continues to hone its competitive edge. The major feature of cellulose acetate is its hydrophilic property. More specifically, water molecules serve as a coating layer on the membrane surface. Due to this feature, when impurities come in contact with the membrane surface, they are easily removed through back pressure washing.* Such impurity removal can be performed on cellulose acetate-based membranes more easily than those based on other materials.

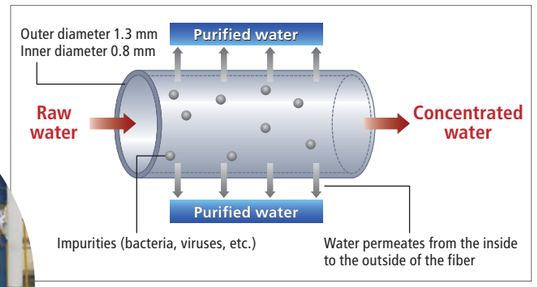
This innovative feature of our membranes has earned significant recognition, and our membranes and membrane systems have been adopted at more than 300 water treatment plants nationwide.

* Using filtrate water, inward pressure is regularly applied on membranes. This enables the removal of impurities existing on the internal surface of the membranes.

Daicen Membrane-Systems Ltd.

Since its establishment in May 1994, Daicen Membrane-Systems has specialized in the water treatment business. Its water treatment business is divided into three major divisions. Through its Membrane Division, the company sells separation membrane modules and systems for use in the water treatment and industrial processing fields. Through its Medical Division, the company conducts the sale and maintenance of medical-use water purification systems. Through its PEARL COMB Division, the company sells air diffusers used for the treatment of sewage and industrial wastewater. Through its wide-ranging water treatment business, Daicen Membrane-Systems is contributing to the preservation of the global environment and a better quality of life.

Cellulose Acetate Hollow Fiber Membrane



Assisting China in Establishing Large-Scale Water Infrastructure

China is facing a clear and present issue of securing the supply of safe drinking water. Under its Twelfth Five-Year Guideline (2011 to 2015), China plans to invest a total of approximately ¥25 trillion in the establishment of water infrastructure in its urban and suburban areas. Adhering to its mission of helping to secure safe water, Daicen Membrane-Systems is working to spread the use of its water treatment system capable of purifying groundwater into safe drinking water.

In addition to water treatment using cellulose acetate-based membranes, this comprehensive water treatment system also performs a raw water pre-treatment process and a disinfection post-treatment process.

Voice

Shuji Nakatsuka

Managing and Research Director, R&D Center,
Daicen Membrane-Systems Ltd.

Q. I heard that it took more than 10 years to develop your cellulose acetate-based membranes. What do you remember the most?

A. At the beginning of the development project, many employees voiced strong objections to the use of cellulose acetate in water treatment membranes. These objections had a point. When we were tackling the development of artificial kidneys, we encountered problems with microorganisms causing deterioration in our membranes. So, their concerns were matters of course. However, all the project members worked with patience on solving this problem, and we finally succeeded in commercializing membranes for use in water treatment. I can clearly remember the day when we completed the construction of our full-scale manufacturing facilities for hollow fiber membranes.

Q. I also heard that cellulose acetate has other properties that are really difficult to control. Can you share some of the difficulties you encountered during development?

A. Properties of cellulose acetate can vary, depending on the level of acetification and polymerization as well as the raw materials used. Therefore, it was really difficult to design the raw materials we use while optimizing the properties and practical membrane characteristics. Also, it was extremely difficult to realize a technology to control the pore size to the 0.01 micrometer level. We spent a lot of time identifying solvents, additives and temperature conditions required to make pores that were exactly the right size.

Q. Does the development of high-performance water treatment systems solely require high-performance membranes?

A. No. For membranes to operate at full capacity, module design is very important. In particular, modules must be designed so that water flow pressure is not excessively reduced and yet impurities must be effectively discharged from membranes by back pressure washing. Furthermore, designing a total system, including pre-treatment processes, according to the required quality of treated water is important.

Q. How do you approach the training of R&D personnel?

A. R&D involves a series of difficulties. So, we need to tackle our projects with great patience and determination. One can never give up. Otherwise, there will be no success. Accordingly, at Daicen Membrane-Systems, we undertake personnel training with particular emphasis placed on fostering expertise in specific areas and enhancing capabilities to complete projects.

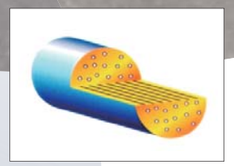
R&D Topic File 04

Replacing Metal with Plastic: Long-Fiber Reinforced "PLASTRON™" Plastics

—Contributing to fuel efficiency through kilogram-level weight reduction in automotive components

PLASTRON™ Balancing Metal-Like Strengths with Lightness

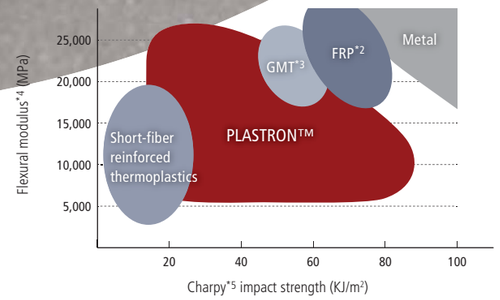
PLASTRON™ is a long-fiber reinforced thermoplastic resin.*1 It is composed of columnar pellets—pre-forming resin materials—each of which measures 3 millimeters in diameter and 11 millimeters in length. These pellets are reinforced with continuous fibers, which are aligned evenly inside the pellets. Molded products based on PLASTRON™ exhibit greater impact resistance and rigidity and are lighter compared with products based on other fiber reinforced plastics. Due to these features, this innovative material is drawing attention as an alternative to metal materials from the automobile and other industries.



Full-length continuous fiber reinforcing a pellet

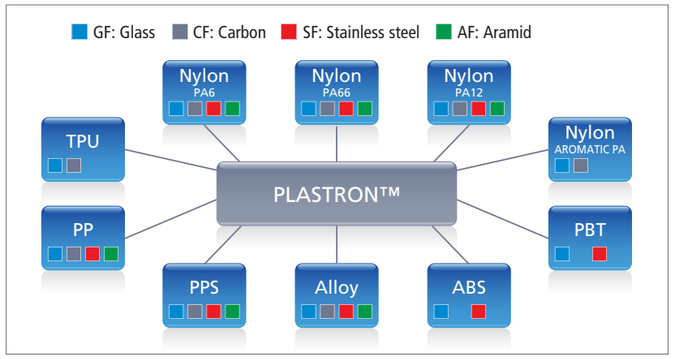
These features are made possible through special processing. The base resin for PLASTRON™ can be general-purpose plastics, such as polypropylene, and engineering plastics, such as nylon, polybutylene terephthalate (PBT) and polyphenylene sulfide (PPS). The base resin can be reinforced using such fibers as glass, carbon and stainless steel according to the application and cost.

PLASTRON™ Boasting Impact Resistance and Rigidity



*1 Thermoplastics is a general term for plastics that soften when heated. In general, softened plastics are poured into molds and cooled to harden and form finished products. Thermoplastics include polyethylene, polypropylene, polystyrene, acrylonitrile-butadiene-styrene (ABS) resin, nylon and polycarbonate.
*2 Fiber reinforced plastics. The chart above shows plastics based on thermosetting resins. As they require longer processing time, it is difficult to make complex shapes with these plastics.
*3 Glass-mat reinforced thermoplastics. GMTs are plastics that are reinforced by impregnating thermoplastics (mainly polypropylene) with glass fiber mats. Like FRPs, it is difficult to make complex shapes with these plastics.
*4 An indicator of a material's stiffness when flexed. More specifically it is the ratio of stress to strain in flexural deformation, or the tendency for a material to bend.
*5 Indicator of plastic impact strength (impact resistance). The higher values indicate stronger resistance.

PLASTRON™ Grades



Daicel Polymer Ltd.

This company was established in 2001 through the spinoff of Daicel's resin business. Playing a significant role in the Daicel Group's plastics and films business, Daicel Polymer is promoting operations centered on thermoplastics compounds (composite, synthetic and mixed) in Japan, China and Southeast Asia. Daicel Polymer has earned the support of its customers by consistently providing materials, based on a variety of resins and fibers, specifically designed to meet their exacting technical needs.

Voice

Satoru Shibata

Team Leader,
"Replace Metal with Plastics" Project Team, Sales Division,
Daicel Polymer Ltd.

Q. How is PLASTRON™ used today?

A. Although PLASTRON™ is used in various industries today, the automobile industry commands the largest portion of our customer base. As you know, automobiles use many structural parts and components based on metal materials boasting high impact resistance and rigidity. As PLASTRON™ is increasingly recognized as an alternative to metal, it has been adopted as a material of such frameworks as bumper brackets*1 and radiator core supports.*2 The PLASTRON™ for use in radiator core supports combines polypropylene—the lightest plastic material used for automobiles—and carbon fibers—the strongest and lightest fiber used for industrial applications. Through PLASTRON™ based materials, we have realized the lightest, most rigid radiator core supports.

*1 A component that connects a bumper with headlamps and other parts
*2 A framework that supports a radiator

Q. Why is the automobile industry your largest customer?

A. Improving fuel efficiency is becoming more important in the industry, which in turn makes designing lightweight vehicles a prerequisite for automakers. In the EU and the United States, regulations for automobile fuel consumption have been enacted.*1 Also in Japan, automakers are required to improve the fuel consumption of their cars over set standards by 2015. Previously, automakers struggled to reduce the weight of their cars at the gram level. However, with PLASTRON™, kilogram-level weight reductions will be possible. By promoting this product, we aim to enhance customer satisfaction.

*1 In the EU, if certain cars fail to satisfy fuel efficiency standards, an automaker may face additional taxes.

Voice

Masahiko Itakura

Director,
Genera Manager of R&D Center,
Daicel Polymer Ltd.

Q. What activities are you involved with through R&D?

A. We are currently undertaking development projects—some short term, others long term. On an annual basis, we conduct several hundred projects. In the development of long-fiber reinforced plastics, we are working to identify effective combinations of resins and fibers, and we are trying numerous combinations. In doing so, we clarify the properties of resultant materials and strive to balance material performance with production costs. Through these activities, we will be able to provide customers with better alternatives than the materials they are currently using.

Q. What kind of difficulties do you face conducting daily R&D?

A. We handle a wide range of resins and fibers. This can make selecting the optimal combination a challenge as we set out to create materials that are most suitable for the specific product our customer is developing. Also, to meet the sophisticated requirements of our customers, we often have to devise completely new combinations of resins and fibers. The most critical thing is establishing a method for evaluating new combinations so that our customers can use these new materials safely and reliably.

R&D Topic File 05

Titanium Oxide Photocatalyst Responding to Visible Light to Improve Living Environments

—Realizing VOC decomposition at normal light intensity

Titanium Oxide Photocatalyst Responds to Visible Light, Enabling New Applications

Photocatalyst refers to materials that cause or accelerate chemical change (act as a catalyst) when exposed to light. The energy of light induces catalysis in these materials, allowing the decomposition of hazardous substances. Photocatalysts are gaining global recognition as an eco-friendly solution. Natural photocatalytic activities include photosynthesis by plants, while artificial photocatalytic materials include titanium oxide (TiO_2), a familiar material widely used as white pigment for paints, cosmetics and food items.

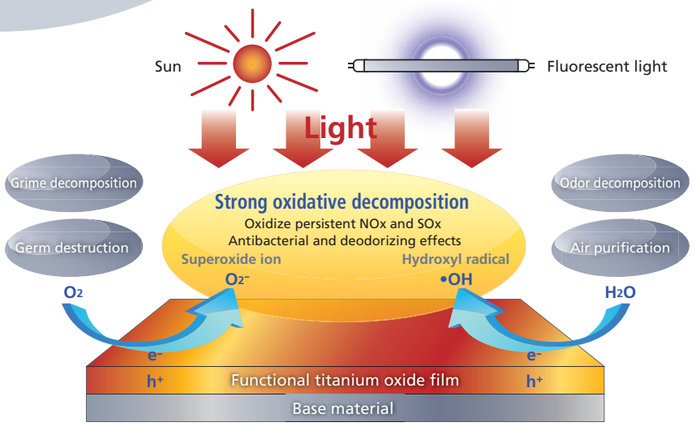
However, titanium oxide has been mainly limited to outdoor use as a photocatalyst. The prevalent form requires invisible ultraviolet light (wavelengths of 10 to 400 nanometers) to cause oxidative decomposition*1 or superhydrophilic reaction.*2 Ultraviolet light is available in sunlight, but not generally indoors. Daicel, however, developed a titanium oxide photocatalyst that responds to visible light, performing well with wavelengths of 400 to 800 nanometers, a range that includes indoor fluorescent lighting. Accordingly, this photocatalyst is attracting significant attention in industries.

*1 Through oxidative decomposition, organic materials placed on photocatalyst are chemically broken down upon exposure to light. This effect can be utilized to dissolve grime, kill germs and prevent germ breeding as well as to purify air, water and soil. For example, it is used for breaking down or deodorizing formaldehyde and acetaldehyde, hazardous substances known to cause sick building syndrome.

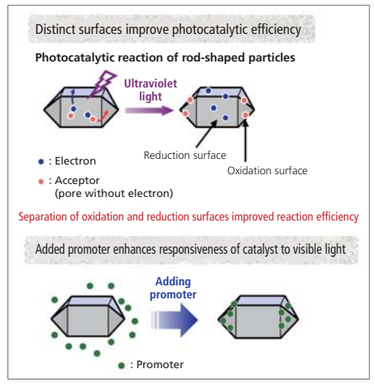
*2 Through photocatalytic superhydrophilic reaction, the surface of an object increases hydrophilic property. This reaction can be used to activate a self-cleansing or anti-frost effect on the surface of various objects. For example, superhydrophilic reaction technology is used for lighting and sound barriers on highways as well as for exterior walls of the Marunouchi Building in front of Tokyo Station.

As the energy of visible light is weaker than that of ultraviolet light, enabling catalysis requires improving the functionality of the photocatalyst. Daicel's titanium oxide photocatalyst provides enhanced photoreaction efficiency. This has been realized through the alignment of photocatalyst particles in a rod shape. This alignment enables the clear separation of the oxidation (positive charge) and reduction (negative charge) surfaces. Moreover, a promoter is selectively added to the oxidation surface to increase its responsiveness to visible light.

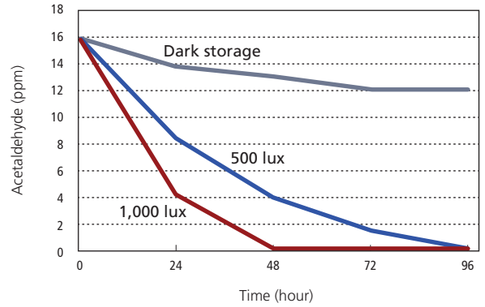
The graph below shows the length of time in hours required for our titanium oxide coating to decompose acetaldehyde at two different light intensities: 1,000 lux, typical of offices; and 500 lux, typical of homes. As the graph shows, Daicel's titanium oxide photocatalyst is capable of decomposing down acetaldehyde under fluorescent lighting and other normal lighting conditions.



Photocatalytic Effect of Rod-Shaped Particles



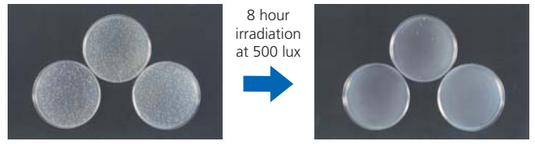
Photocatalyst Performance Test (Acetaldehyde Decomposition)



(Source: Central Research Center, Daicel)

Our titanium oxide photocatalyst also provides an antibacterial effect strong enough to kill or prevent the breeding of staphylococcus aureus, pseudomonad aeruginosa and bacteria coliform. Looking ahead, we plan to promote the use of this photocatalyst at hospitals, welfare facilities and schools, thereby contributing to improved living environments.

Antibacterial Evaluation (Photo: Staphylococcus Aureus)



Comparison sample

Sample coated with Daicel's photocatalyst

Evaluation Results

	Destruction rate (%)	500-lux fluorescent light irradiation period
Staphylococcus aureus	99.85%	8 hours
Pseudomonad aeruginosa	99.99%	24 hours
Bacteria coliform	99.96%	24 hours

(Source: Japan Food Research Laboratories)

Voice

Q. At your research facilities, what kind of activities are you involved with?

A. Using acetaldehyde and other substances, we evaluate the photocatalytic performance of films coated with titanium oxide. Also, in addition to the manufacture of titanium oxide, we undertake development of coating agents based on titanium oxide.

Q. What do you find challenging in development and evaluation?

A. The Japanese Industrial Standards (JIS) have yet to establish a method for evaluating volatile organic compound (VOC) decomposition using visible light. At our facilities, to confirm the status of VOC decomposition, we set gas concentrations at a certain level. At a high gas concentration, decomposition naturally requires a longer period of time. So, it was difficult to find the right concentration. We had to repeat experiments many times.

Q. What issues will you address in the future?

A. Since photocatalysts are often used as a coating on walls and other objects, we need to undertake development projects with binders (adhesives) in mind. In testing, a photocatalyst is applied on an object together with binders and is still required to show a certain level of photocatalytic performance. Even if the performance of our titanium oxide itself is sufficient, binders can inhibit the performance of titanium oxide. So, at present, we must tackle the development of binders that boost the performance of titanium oxide. I am working closely with the members of my team everyday to realize such binders.

Mio Matsuoka

Researcher,
Analytical Solution Group,
Daicel Chemical Industries, Ltd.

R&D Topic File 06

R&D for Eco-Friendly Chemical Products Based on Biomass Raw Materials

—Tackling eco-friendly chemistry through biocatalysts and chemical catalysts

Green Product Development Center Established

With the aim of contributing to the realization of a sustainable society, Daicel established the Green Product Development Center on April 1, 2011. At this center, we promote the development of technologies required to manufacture eco-friendly chemical products using biomass—plant-based recyclable resources—as raw materials and biocatalyst processes. Through this new R&D base, we are taking on the challenge of realizing "green chemistry."

Dr. Akinobu Matsuyama

General Manager, Green Product Development Center, R&D Management, Daicel Chemical Industries, Ltd.

Meanwhile, at the Corporate Research Center, we are promoting R&D for technologies to manufacture biomass-based chemical products using chemical catalysts. At both of these R&D bases, Daicel is advancing in-house R&D projects while accelerating its participation to national projects to create fundamental technologies.

1. Biocatalyst Approach

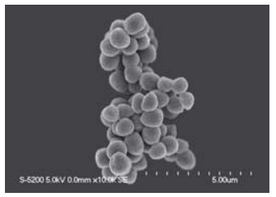
Project **Innovative BioProduction Kobe**
Project jointly organized by Kobe University and the Ministry of Education, Culture, Sports, Science and Technology

The Innovative BioProduction Kobe project aims to realize "bioproduction," which is defined as the production of biomass-based materials through the use of microorganisms. In pursuing bioproduction, project members are working to integrate research areas in agricultural and industrial sciences by gathering specialized knowledge about agricultural gene resources and biomass, comprehensively covering such specialized facets as fermentation engineering, reaction engineering and separation engineering.

Specifically, Daicel is promoting R&D for realizing "super microorganisms" (biocatalysts), which enable the production of brand-new chemical products, through the introduction of new enzyme systems to existing microorganisms. Super microorganisms can change the production of alcohols. Currently, alcohols are produced using fossil resources and chemical catalysts. By using super microorganisms, we are currently undertaking the development of technologies to produce bio-alcohols from biomass resources.

Project **Development of Basic Technologies for Advanced Production Methods Using Microorganism Functions**
Project organized by the New Energy and Industrial Technology Development Organization (NEDO)

This project was implemented from 2006 to 2010. Through the project, Daicel succeeded in the development of a biocatalyst suitable for organic chemicals. More specifically, the biocatalyst which we created can keep functioning in organic solvents. Then, we tried to produce chemical products by transforming certain water-insoluble chemicals through this biocatalyst in organic solvents. We discovered a microorganism, *Kocuria rhizophila* DC2201, that can be used as biocatalyst in chemical production. Bacteria coliform, which is often used in biocatalytic reaction, is usually damaged by organic solvents and suffers bacteriolysis. In contrast, *Kocuria rhizophila* DC2201 shows resistance to organic solvents. It does not undergo bacteriolysis and is able to maintain its cell architecture. Such robustness makes the use of this microorganism effective as biocatalyst, enabling the transformation of substances in organic solvents.



(Photo courtesy of NITE)

The National Institute of Technology and Evaluation (NITE) has completed the genome (genetic code) analysis for *Kocuria rhizophila* DC2201 discovered by Daicel. In addition, Daicel has developed a gene recombination method for this microorganism. Through the use of this new method, expectations are heightening for wide-ranging applications of *Kocuria rhizophila* DC2201.

2. Chemical Catalyst Approach

Project **Development of Basic Technologies for Green Sustainable Chemical Process**
Project organized by NEDO

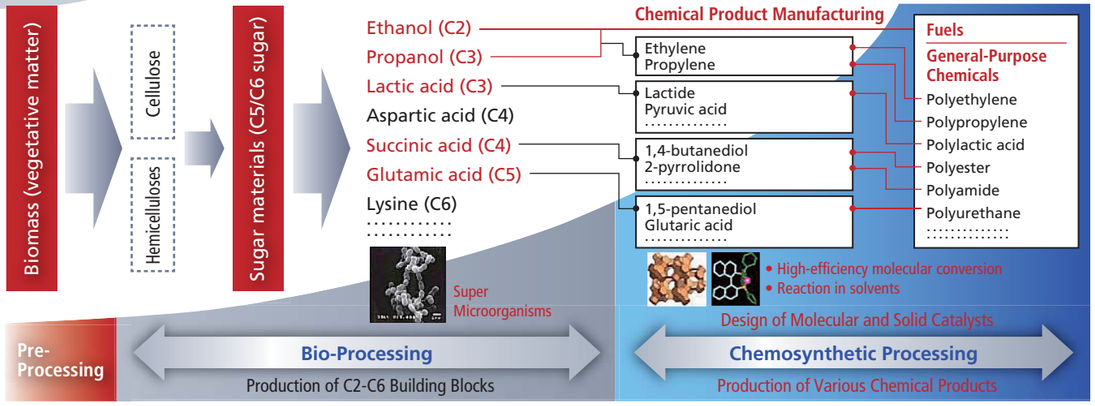
This project aims to effectively utilize glycerol. Glycerol is a by-product created through the production of biodiesel using triglyceride, which is a vegetable oil. A liquid fuel alternative to light and heavy oil, biodiesel is used with diesel engines. Annual global biodiesel fuel (BDF) production is soon expected to reach 9.0 million tons. Accordingly, annual global glycerol production is projected to hit 1.2 million tons.

Dr. Takashi Arai

General Manager, Planning, R&D Management, Daicel Chemical Industries, Ltd.

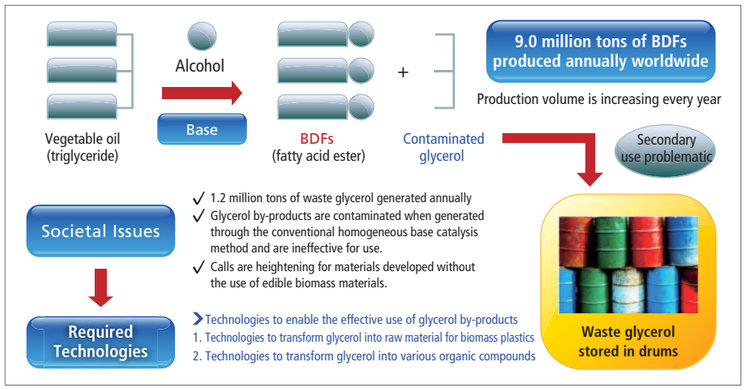
In line with this project, Daicel is examining the possibility of effectively utilizing glycerol by-products, which are presently treated as industrial waste. More specifically, we are undertaking R&D on various themes, including: (1) the use of glycerol as a raw material for known plastics, in order to realize biomass plastics for the fiber and engineering fields; and (2) the use of glycerol as a raw material for known chemical products, in order to realize biomass-based chemical products, such as anti-freeze for aircraft and a solvent alternative to toluene. Through these R&D activities, supported by NEDO subsidies, we are working toward decreasing industrial waste, expanding the uses of BDFs and reducing CO_2 emissions worldwide. Ultimately, the Daicel Group aims to realize eco-friendly, green chemicals through advanced R&D activities.

Chemical Manufacturing through Integrated Biochemical Processes



(Source: www.org.kobe-u.ac.jp/bioproduction/mission.html)

Biodiesel Fuel (BDF) Production: Glycerol By-Products and Their Effective Use



Products and Technologies Contribute to a Healthier Environment and People's safety

The Daicel Group develops and provides products and technologies that contribute to safety, society and a healthier environment.

Daicel Chemical Industries, Ltd.

Automobile Airbag Inflators

A central component of automobile airbag systems, airbag inflators dispense gas to the protective airbag at the moment of impact during a collision. Daicel has been actively involved in environmental measures since inflators were first developed. In order to contribute to improved automobile fuel consumption, we have been developing lightweight inflators. This effort has achieved a 35% weight reduction compared to our 2001 product.

The Law Concerning Recycling Measures for End-of-life Vehicles (The End-of-life Vehicle Recycling Law) came into effect in Japan on January 1, 2005. In response, we launched the full-scale operation of our inflator recycling business. This business utilizes the airbag inflator recovery and processing system demonstrated and prescribed for industry use by the Japan Automobile Manufacturers Association, Inc., the Japan Auto Recycling Partnership, and other organizations in 1998. As a result, inflators that have been recovered from end-of-life vehicles can be completely recycled.

Automobile airbag inflators

Used inflator recycling facility

Skin- and Eco-Friendly Surfactant Series

Detergent can be rough on the hands. Rough skin is often caused by surfactants, which are cleansing agents to remove grime. To solve this problem, Daicel recently developed the CELMOLLIS series of surfactants, using its proprietary method of producing polyglyceryl alkyl ether.

The CELMOLLIS series is gentler to skin than even amino acid surfactants, which are recognized as causing less skin irritation than typical surfactants. This new series of surfactants also provides more powerful cleansing and foaming, reducing the amount of detergent required. Due to these features, the CELMOLLIS series is a highly skin- and eco-friendly surfactant.

Gentle handwashing: a potential CELMOLLIS application

LLNA: DA Method Listed in the OECD Guidelines

Triggered by overactive immune response to chemical substances, skin sensitization can lead to rash and eczema on skin. In determining the skin sensitization of chemical substances, the LLNA*1 method using mice has become the mainstay. However, this method involves the use of radioactivity.

Daicel has independently developed the new LLNA: DA*2 method, a non-radioactive modification of the LLNA method. The LLNA: DA method has undergone evaluation processes and was recently validated. Since validation, this new method has been listed as 442A under the OECD Guidelines for the Testing of Chemicals.

For Daicel and other companies handling chemical substances, determining the skin sensitization potential of chemicals is one of the most important issues. It is important because we must fulfill responsibility in providing safe products and because we must maintain safe workplaces and protect our staff from occupational accidents. Working to meet these requirements, Daicel will continue to advance R&D to develop safe products.

*1 LLNA: Local lymph node assay
*2 LLNA: DA: LLNA modified by Daicel based on adenosine triphosphate (ATP) content

Daicel-Evonik Ltd.

Natural biopolymers

Until now, petrochemical-based polymers have enriched our lives in various ways. However, in line with the increasing awareness of environmental issues, society is strengthening its voice requesting more eco-friendly plastic materials and products.

Natural biopolymers are being used to create eco-friendly materials and products. Daicel-Evonik has launched natural biopolymers "DAIAMID® Terra" and "VESTAMID® HT Plus." Both are polyamide resins made from caster oil, which is extracted from nonfood caster-oil plants.

Realizing the functionality of conventional polymers with biopolymers has been challenging. Biopolymers have reputation of being somewhat impractical. However, these two Daicel-Evonik products boast heat resistance on par with existing petrochemical-based polymers, as well as high rigidity and low water absorption. Disseminating these advantageous features, we plan to expand the application of these products in various fields.

Caster-oil plant

DAIAMID® Terra
VESTAMID® HT *plus*

Fiscal 2010 (year ended March 31, 2011) Highlights

2010 April 9th Daicel Group Responsible Care Promotion Assembly Held

Daicel held the 9th Daicel Group Responsible Care Promotion Assembly on April 9, 2010 at its Tokyo Head Office. The Company tries to raise employee awareness of the Responsible Care Initiative—one of the two pillars of its CSR Initiatives—with this annual event. This year's focus was environmental issues. The Company invited Mr. Saburo Nakata, an executive director of the Japan Chemical Industry Association (JCIA), who gave a lecture on the theme of "Global Warming and the Chemical Industry."

2010 May High-Efficiency Power Generation Turbine to Be Installed at the Aboshi Plant

Daicel has decided to introduce a cogeneration system, powered by a 30-MW high-efficiency gas turbine, at the Aboshi Plant at the Himeji Production Sector in 2012. Newly developed by Kawasaki Heavy Industries, Ltd., this gas turbine boasts the world's highest generation efficiency and the best environmental performance of its class. More specifically, it features: (1) generation efficiency exceeding 40% and total cogeneration thermal efficiency exceeding 80%; (2) low nitrogen oxide (NOx) emissions, with concentrations at 15 particle per million (ppm) or less; and (3) easy repair and maintenance to enable substantial reduction in lifecycle costs.

2010 June Former President Daisuke Ogawa Takes Chairmanship, Former Executive Officer Misao Fudaba Becomes President

At the Annual General Meeting of Shareholders and the Board of Directors meeting, both held on June 25, 2010, president and CEO Daisuke Ogawa was appointed representative director and chairman of the board. Also, Misao Fudaba, executive officer and general manager of the Raw Material Purchasing Center, was appointed president and chief executive officer.

2010 July LLNA: DA Method Listed in the OECD Guidelines

Developed by Daicel, the LLNA: DA method for simplified testing of the skin sensitization potential of general-purpose chemicals has been included in the OECD Guidelines for the Testing of Chemicals. This is the first new method alternative developed in Japan for chemical safety tests to win the honor of being included in the guidelines.

2010 September Aerospace & Defense Systems/Safety Systems Company Held 3rd Global KAIZEN Contest

From September 27 to October 7, the 3rd Global KAIZEN Contest was held under the theme of "Look Back, Take Notice, Think and Act." More than 80 teams from operation sites across the world participated in this event. Competing for the world championship in three major categories, all teams made presentations on their initiatives for the Safety Award, 3S Award and TPS Award.

2010 October Guangzhou Branch of Shanghai Daicel Polymers, Ltd. Established

With the aim of expanding its sales and market development activities in South China centered on Guangzhou City, Daicel Polymer Ltd. established the Guangzhou Branch of Shanghai Daicel Polymers, Ltd. in October 2010. Daicel Polymer has continued to strengthen its formulation technologies and quality control through operations in Japan. Based on its capabilities in these areas, with the benefit of raw material procurement in China, Daicel Polymer will aggressively undertake the development of auto parts and other products to meet China's rapidly growing domestic demand while accelerating sales activities through this new branch.

High Performance Film Development Center Established at the Kanzaki Plant

To promote the development and commercialization of functional films for electronics applications, Daicel established the High Performance Film Development Center at its Kanzaki Plant. Through close cooperation with the manufacturing division, this center will work to create and expand the portfolio of film products based on the Company's proprietary technologies, such as anti-Newton ring films for resistive touch panels. The center will also help the Company launch new film products quickly in the market.

2010 December Daicel to Boost Ethyl Acetate Production Capacity

To further enhance its acetyl and ethanol chains, Daicel decided to boost the ethyl acetate production capacity by 50% at its Ohtake Plant. For the production of ethyl acetate, Daicel became the first Japanese company to adopt the ester process, which uses bioethanol as a raw material. Daicel currently boasts annual capacity totaling 50,000 tons and will increase this figure to 75,000 tons. Necessary facility expansion is schedule for completion in November 2011, and the new facilities are expected to start operation in the following month. As these facilities use plant-based bioethanol, they will contribute to the reduction of CO_2 emissions.

2011 February 3D-I New Medium-Term Plan Announced

Daicel formulated its 3D-I new medium-term plan, which is the first step of the "3D Step-Up Plan" toward the achievement of the Daicel Group long-term vision "Grand Vision 2020." Effective from fiscal 2011 to fiscal 2013, 3D-I was announced on February 21, 2011. Under 3D-I, Daicel has set performance targets and specific action plans through fiscal 2013, which marks the Company's first step toward becoming "a company that proudly delivers the best solutions to the global market"—the future vision for the Daicel Group included in the Grand Vision 2020.

2011 March Daicel's Celluloid-Related Historical Materials Recognized as *"Chemical Heritage"*

On March 27, 2011, the Chemical Society of Japan certified Daicel-owned buildings and related materials indicating the birthplace of the Japanese celluloid industry as a "Chemical Heritage." These Materials include manufacturing facilities—such as the coal-fired boilers built by Japan Celluloid Artificial Co., Ltd. (one of Daicel's predecessors) —and celluloid products that we have maintained. For more details, please see page 52 of this report.

Upgrading CSR Foundations

1 Corporate Governance Framework

Daicel has adopted a corporate auditor system. Also, by welcoming external directors and allowing them to provide opinions and advice based on their expertise, the Company is working to ensure that the decisions made by its Board of Directors are appropriate and the execution of director duties is effectively supervised. The Company has also adopted an executive officer system. The adoption of the executive officer systems has enabled the Company to clearly separate its decision-making, supervisory and business execution functions. Such a clear division of roles has allowed us to bolster our business management structure and, consequently, corporate activities.

In addition, Daicel has adopted an internal company system. Through this system, the Company is promoting various initiatives aimed at strengthening collaboration among its production, sales and R&D functions, improving productivity and strategic functions within its corporate departments, and reestablishing its R&D structure.

Based on its corporate auditor system, the Company has established a corporate framework under which its Board of Directors makes management decisions in an efficient manner and fulfills its supervisory functions, and its Board of Corporate Auditors accomplishes its auditing functions. Such a framework has enabled us to keep reinforcing our corporate governance.

• Board of Directors

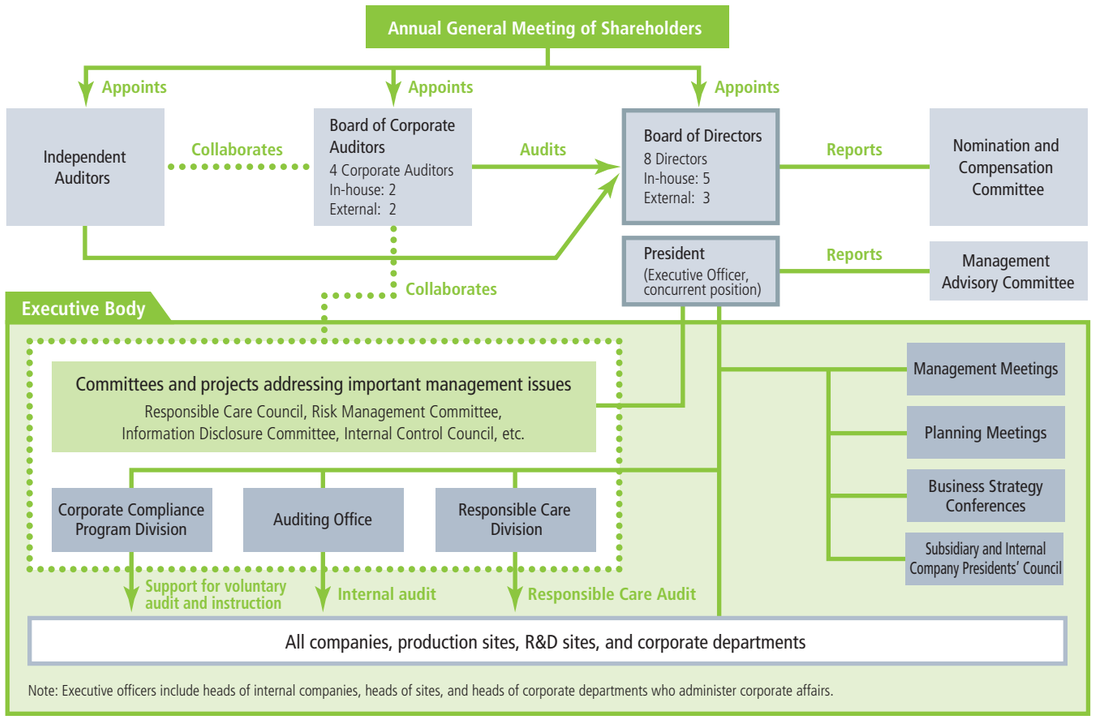
Daicel's Board of Directors consists of eight directors, three of whom have been externally appointed. The Board of Directors meets, in principle, once a month to make decisions concerning important management issues in line with the regulations for the Board of Directors meetings. Furthermore, the Board of Directors supervises the management of corporate affairs.

At Daicel, external directors are tasked with providing advice and supervisory functions based on their experience and expertise. Two of the Company's external directors have been designated as independent directors, as defined under the Securities Listing Regulations of the Tokyo Stock Exchange and other bourses in Japan.

Four of the five in-house directors have concurrent positions as executive officers. Their responsibilities as executive officers are limited to those relating to Daicel's president, who provides supervisory functions for all business divisions and corporate departments. This means that their responsibilities have been separated from those of the Company's internal companies, which conduct actual business operations.

The term of office for Daicel's directors is one year. Such a short term of office enables Daicel shareholders to be better involved with the appointment of directors. At the same time, it allows us to better clarify the management responsibilities of our directors and thereby reinforce our corporate governance.

Corporate Governance Framework



Note: Executive officers include heads of internal companies, heads of sites, and heads of corporate departments who administer corporate affairs.

The Company does not have any executive and managing directors. This is to strengthen the decision-making and supervisory functions of the Board of Directors and to clearly separate the Board of Directors' responsibilities from those relating to the management of corporate affairs.

• Board of Corporate Auditors

Daicel currently has four corporate auditors, two of whom have been externally appointed. All corporate auditors are required to attend Board of Directors' meetings. In addition, full-time corporate auditors are required to attend meetings of the Management Meeting, the Risk Management Committee and other important organizations, thereby auditing the management of corporate affairs in general.

Meanwhile, the Company's corporate auditors all together form the Board of Corporate Auditors. The Board of Corporate Auditors holds meetings to report, deliberate and make decisions on important issues relating to the Company's audits.

Corporate auditors regularly receive reports from the Company's internal auditing division and independent auditors. In addition, on an as-required basis, they collaborate—through the exchange of information and opinions—with the internal auditing division and the independent auditors in promoting audits of the Company. The two external corporate auditors have been designated as independent corporate auditors, as defined under the Securities Listing Regulations of the Tokyo Stock Exchange and other bourses in Japan.

Also, as an organization to support audits by corporate auditors, the Company has established the Office of Corporate Auditors. The Office of Corporate Auditors has its own dedicated officers who are independent from divisions promoting business affairs.

• Management Meetings

Daicel has established the Management Meeting as a body to have deliberations and make decisions prior to its president implementing the basic corporate management policies formulated by the Board of Directors. The Management Meeting consists of the president, Management Advisory Committee members and the executive officers selected by the president as its members. The Management Meeting convenes, in principle, twice a month.

• Auditing Office

As an organization to conduct internal audits, Daicel has established the Auditing Office in charge of internal auditing functions within its overall executive body. The Auditing Office conducts regular internal audits of business divisions and Group companies.

2 Internal Control Systems

In accordance with its basic policies concerning the development of internal control systems formulated by the Board of Directors, Daicel works to administer and enhance its efficient and effective internal control systems. We believe that these systems help the Daicel Group sustain steady growth. To accurately grasp the status of the entire Group and regularly discuss initiatives aimed at ensuring the effective functioning of internal control systems, Daicel has established an Internal Control Council.

Response to the Financial Instruments and Exchange Law (Internal Control Reporting System)

The Auditing Office assesses the effectiveness of the Company's internal control over financial reporting to prepare and submit a report to the Financial Services Agency (FSA) every year. Through these activities, the Auditing Office is striving to ensure the reliability and transparency of Daicel's financial reporting.

* Daicel's report on internal control over financial reporting for fiscal 2010 is disclosed on EDINET, a corporate disclosure system established by the FSA at the following URL: info.edinet-fsa.go.jp/ (Japanese language only)

3 Risk Management

Daicel established the Risk Management Committee in 2006 as an organization to coordinate and promote companywide risk management activities. The Risk Management Committee consists of executive officers in charge of corporate departments. Since its establishment, the Risk Management Committee has guided the entire Company in aggressively conducting risk management activities.

Through its annual risk inventory clearance, the Company first identifies risks that can materially affect its business performance and assigns priority levels to examine possible countermeasures. Then, following the Plan-Do-Check-Act (PDCA) cycle, each division promotes activities aimed at preventing those identified risks from materializing or minimizing the impact of those risks when materialized. More than 30 Group companies in Japan and overseas have also promoted similar activities. Through these activities, Daicel and its Group companies are working to enhance the risk intelligence of all Group employees.

Also, with the aim of improving employees' capabilities to make effective initial responses in case of accidents and natural disasters, Daicel formulated the Emergency Risk Management Guidelines in January 2008. Based on these guidelines, the Company has continually held drills that assume the occurrence of significant risks. During fiscal 2010, these drills were conducted assuming an accident at one of the Company's plants on holidays. Issues identified through these drills were examined, and the results of this examination have been incorporated into the revision of applicable rules to enable practical responses.

Looking ahead, we aim to instill risk management principles in our daily operations and promote risk management activities centered on the following.

1. Promote corporate management with consistent awareness of risks
2. Prepare for timely and appropriate responses to significant individual risks

Initiatives Relating to Corporate Ethics (Compliance)

The Daicel Group has recognized complying with corporate ethics as an integral part of its CSR program, and individual divisions and Group companies are strategically promoting related initiatives.

Daicel's Corporate Ethics Management System

We believe that each employee's adherence to corporate ethics is an essential management issue, and we are promoting this initiative companywide.

This initiative is not a temporary measure. In order to ensure that corporate ethics is practiced continuously, we have formulated our Corporate Ethics Management Regulations. In addition, each division has established its own Corporate Ethics Management System based on processes that incorporate the Plan-Do-Check-Act (PDCA) cycle, and through activities involving the participation of all employees, we are striving to maintain and improve this system.

Corporate Ethics Promotion System

We established the Corporate Compliance Program Division to promote corporate ethics activities and appointed our representative director as our Corporate Compliance Officer. The Corporate Compliance Program Division supports the independent initiatives of each division and Group company based on the Corporate Ethics Management System and continuously promotes activities to ensure compliance. The head of each division appoints a CSR Promotion Chief to lead various CSR-related activities, including corporate ethics activities. From fiscal 2009, the Company started to appoint CSR Promotion Chiefs at its Group companies.

CSR Promotion Chiefs share information about corporate ethics activities and difficulties they experience through the Company's Intranet. Through such information exchange, we are working to constantly improve our corporate ethics activities.

Also, the Company establishes committees dedicated to individual issues in accordance with related in-house regulations, thereby promoting compliance with related laws and regulations.

Examples of Committees

Regulation	Committee	Goal
Regulations on Export Controls	Export Controls Committee	To ensure that the Company and its Group companies do not engage in illegal export or provision of goods and technologies that are prohibited under security trade-related laws and regulations for the purpose of maintaining international peace and security
Regulations on Personal Information Protection	Personal Information Protection Committee	To acquire, manage and use personal information appropriately
Regulations on Information Disclosure	Information Disclosure Committee	To disclose corporate information appropriately

Legal Compliance System

Daicel has established a Legal Compliance System. Under this system, corporate departments are designated as organizations in charge of ensuring compliance with laws and regulations relating to their respective operations. More specifically, designated corporate departments are tasked with obtaining information regarding related laws and regulations and disseminating such information to other corporate departments that may be affected by them. At present, the Legal Group and 13 other corporate departments have been designated as organizations responsible for compliance with approximately 150 laws and regulations. They use the Company's Intranet to provide employees with related information. We plan to strengthen in-house seminars and educational materials used in these seminars, thereby promoting compliance with laws and regulations.

Corporate Ethics Training Programs

Daicel provides position-specific corporate ethics training to new employees, union members, leaders and directors, as well as presidents of Group companies.

Moreover, corporate ethics training including CSR themes is provided strategically on important occasions—for example, when employees are promoted. Also, in line with its technician training programs aimed at familiarizing technicians and engineers with basic techniques required for fulfilling a manufacturer's responsibility—achieving stable supply of safe products—the Company offers educational programs in such areas as legal compliance. (See page 47 for more details.)

Individual divisions are tasked with obtaining information regarding the laws and regulations directly linked with their operations and educating their personnel. In addition, departments in charge of compliance with laws and regulations hold regular seminars on subjects of their respective fields of expertise. For example, the Personnel Group offers open seminars on personnel matters. If necessary, these seminars are provided on a divisional basis.

During fiscal 2010, the Company held a Corporate Ethics Leader Seminars for leaders of all ranks. The Corporate Compliance Program Division, the Legal Group and the Personnel Group cooperated with each other to hold a total of 22 seminars at 10 locations in Japan with the participation of 568 leaders (participation rate: 82%). At these seminars, the Corporate Compliance Program Division provided explanations on examples of deceptive behaviors of other companies, the Legal Group on Antitrust Law and Regulations regarding export controls, and the Personnel Group on overtime work and power harassment.

Examples of In-House Seminars

Antitrust Law	Act against the Delay in Payment of Subcontract Proceeds, etc., to Subcontractors	Intellectual Property Rights
Regulations on Export Controls	Confidential Information Management	Regulations on Insider Trading
System Security	Regulations Relating to Corporate and Other Taxation	Countermeasures against Antisocial Forces

Consultation and Reporting System (Corporate Ethics Help Line)

With the intent of establishing a system to protect whistleblowers who act in the public interest, Daicel is taking steps to ensure that the employees of each workplace are able to issue reports and hold consultations without difficulty. However, for circumstances where corporate ethics-related issues cannot easily be solved through ordinary reporting to supervisors, we have put in place a Corporate Ethics Help Line—a unique in-house reporting system—to ensure that appropriate advice is available. To further promote use of this initiative, we have also provided an external Corporate Ethics Help Line.

Through the administration of the Corporate Ethics Help Line, whistleblowers and those who request consultations must be protected from the consequences of their actions. Daicel's Corporate Ethics Management Guidelines clearly state that:

1. the personal information and privacy of whistleblowers and those who request consultations must be protected;
2. adverse treatment in response to whistleblowers and those who request consultations must be banned; and
3. results of related investigations must be fed back to whistleblowers and those who requested consultations.

Furthermore, the Company has formulated Detailed Guidelines for the Administration of the Corporate Ethics Help Line to ensure appropriate administration of this initiative.

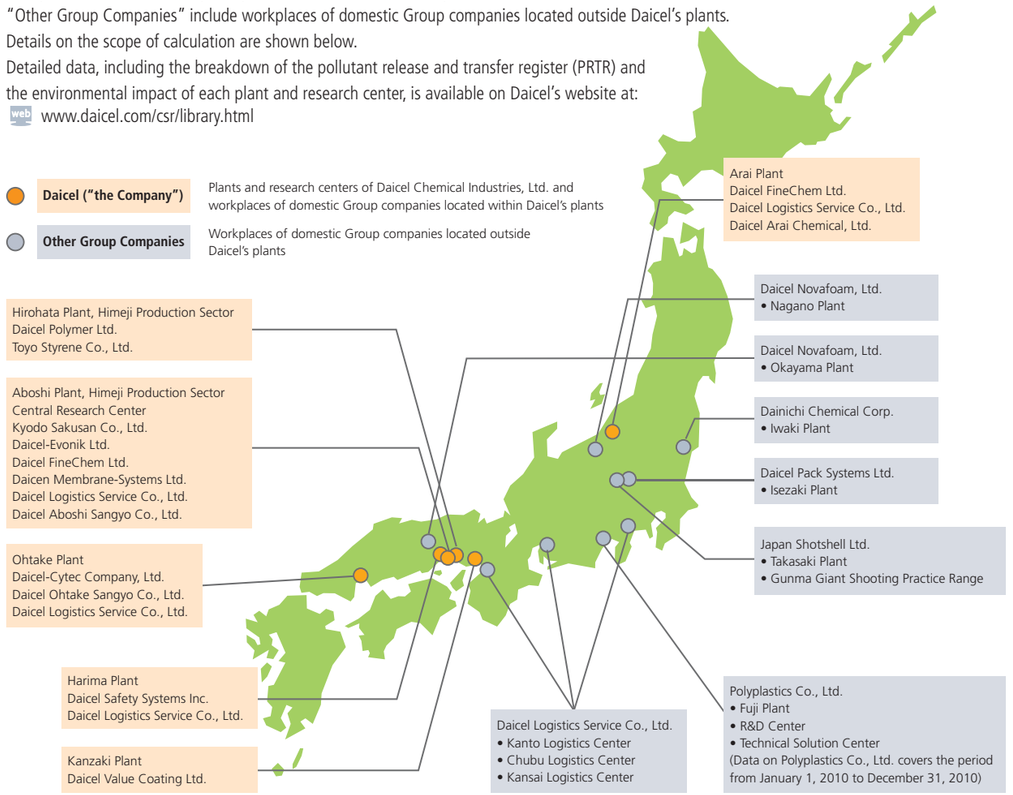
Also, Group companies in Japan have established both an internal and external Corporate Ethics Help Line and are promoting similar initiatives.

The Responsible Care Initiative

The Responsible Care Initiative refers to activities in which organizations that manufacture or handle chemicals implement environmental, safety and health measures in a voluntary manner. These organizations are required to publicize the results of these activities and to facilitate communication with communities in which they operate. In addition, these activities must be conducted at all stages, from chemical development to disposal. The Responsible Care Initiative is promoted by the International Council of Chemical Associations (ICCA). This internationally recognized initiative is recommended by the "Agenda 21" document of the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, held in Rio de Janeiro in 1992. The focus of this initiative is to encourage the proper management of chemicals. In Japan, in collaboration with the ICCA, the Japan Responsible Care Council (JRCC) was established in 1995 as a wing of the Japan Chemical Industry Association (JCIA). The JRCC was subsequently reorganized as a Responsible Care Committee under the JCIA. Since then, many corporations have joined this committee to promote the initiative.

Scope of Data Calculation for Responsible Care Initiative Reporting

Data calculation in this section includes business sites that conduct production and logistics operations.
Also, in this section, "Daicel," or "the Company," includes plants and research centers of Daicel Chemical Industries, Ltd. as well as workplaces of domestic Group companies located within Daicel's plants.
"Other Group Companies" include workplaces of domestic Group companies located outside Daicel's plants.
Details on the scope of calculation are shown below.
Detailed data, including the breakdown of the pollutant release and transfer register (PRTR) and the environmental impact of each plant and research center, is available on Daicel's website at:
web www.daicel.com/csr/library.html



Responsible Care: Basic Policies and Implementation System

We will strive to implement the Responsible Care Initiative throughout our operations in order to contribute to a viable sustainable society.

In 1995, Daicel established its Basic Policies for Responsible Care (RC) based on the guiding principles for improvement of environmental, health and safety conditions of the Japan Chemical Industry Association. Daicel is deeply aware of its responsibility as a corporate citizen to protect the environment and ensure the health and safety of all those involved with the Company in whatever capacity and every stage of its operations—from the design of products to their manufacture and disposal. With this in mind, Daicel is promoting across-the-board RC activities.

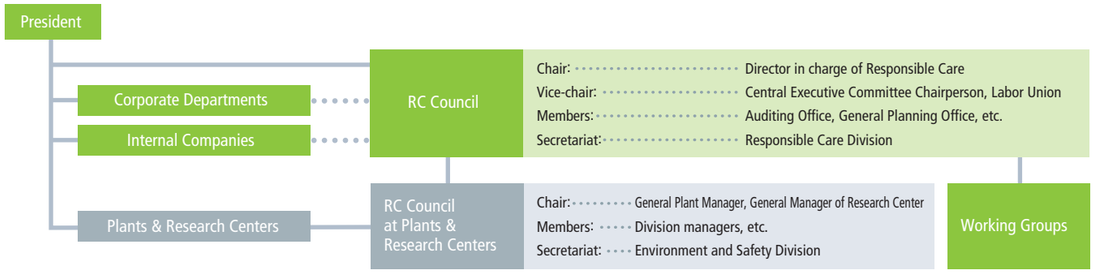
During fiscal 2010, Daicel added a new policy with the aim of clarifying its measures for biodiversity conservation.

Basic Policies for Responsible Care

In all aspects of its business operations, Daicel is making the utmost efforts to ensure environmental preservation, process safety and disaster prevention, occupational health and safety, chemical and product safety, distribution safety, and dialogue with society in accordance with the Responsible Care Standards of the Japan Chemical Industry Association (JCIA). Daicel is making steady and continuous progress in all of these areas.

1. While strictly abiding by laws and regulations currently in effect, in its business operations, Daicel will strive to uphold the principles of environmental preservation and attention to safety. All employees will be made aware of policy measures and their assistance will be secured during implementation to ensure sustained effort.
2. Daicel will conduct a thorough assessment of its new products' impact on health, safety, and the environment at every stage—development, manufacture, distribution, use, and disposal—prior to installing facilities for their production and introducing them to the market. Daicel will also strive to produce and offer products that take people's health, safety, and the environment into consideration.
3. Daicel will collect and maintain a database of information regarding environmental and safety issues that relate to its products and the substances it handles. To ensure their safe handling and use, the Company will provide all necessary information to users and distributors.
4. Daicel will promote raw material-saving and energy-saving initiatives as well as the recycling of waste products and restraints on their production to protect the environment and economize on the use of limited raw materials.
5. Daicel will seek to constantly raise safety standards to achieve a no-accident, no-disaster record at the manufacturing stage. The Company will ensure that appropriate emergency response procedures are in place, training is undertaken, and, in the event of an accident, appropriate countermeasures are taken at once.
6. Daicel will research, develop, and introduce technologies and products that are healthier, safer, and more environment-friendly than ever.
7. Daicel pledges to strictly abide by regulations in force in the relevant jurisdictions and give due attention to the environmental and safety concerns of the other parties involved when engaging in international transactions involving chemical products, conducting international business, and transferring technologies abroad.
8. Daicel will actively lead and support the environment- and safety-related activities of the Daicel Group companies with the aim of securing a better and safer environment for all.
9. Daicel will participate in and cooperate with environmental preservation activities undertaken by the communities in which it operates and seek to gain the trust and understanding of society as a whole by establishing a dialogue with it on safety and environmental matters.
10. Daicel will deepen its understanding and awareness of the importance of biodiversity conservation and promote biodiversity-friendly activities so that generations to come will be able to receive the benefits of biodiversity.

Organizational Structure for Responsible Care



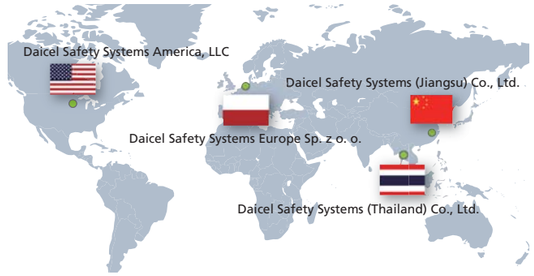
Total Environment, Health and Safety Assessment System

Since 1995, Daicel has administered its unique Total Environmental, Health and Safety Assessment System ("Total EHS Assessment System"). Assessments based on this system are undertaken in accordance with the Basic Policies for Responsible Care.

Under the Total EHS Assessment System, a prior assessment of diverse risks associated with all business operations—including planning, R&D, production, consumption, and disposal—is initiated in order to ensure thorough consideration of environmental, health and safety issues. From a risk management perspective, the implementation of Total EHS Assessment System is indispensable to ensuring effective corporate management.

The total number of assessments to date stands at around 520 for Class I plans (new plans with a profound impact on corporate management). In addition to the Company and Other Group Companies, we have introduced the Total EHS Assessment System at overseas Group companies from fiscal 2010, and they are promoting implementation.

Overseas Group Companies Introducing Total EHS Assessment System in Fiscal 2010



Total EHS Assessment System: Its Mechanisms

1. Implementation of Total EHS Assessment System is a precondition for new-plan approval.
2. New plans are ranked by importance. This allows the implementation of a rank-specific method of Total EHS Assessment System.
3. Total EHS Assessment System is performed at each pivotal stage (basic, detailed and follow-up assessments according to stage).

Details of New Projects

- New projects
- Changes in matters (e.g. processes) related to manufacturing
- New contracts/changes in distributors, customers and product applications
- New contracts/changes in manufacturing outsourcing
- Establishment, expansion and renovation of facilities
- Acquisition and transfer of properties and equipment
- New/change in waste management

Items in Prior Assessments

- Legal compliance
- Operational safety at facilities
- Safe handling of chemical substances
- Product safety
- Environmental preservation
- Distribution safety
- Occupational health and safety
- Safety in manufacturing out-sourcing, purchasing and sales

Environmental Management Systems

Environmental management systems support our Responsible Care Initiative.

We have committed ourselves to a program aimed at ensuring that all of Daicel's plants as well as its research centers acquire certification under ISO14001, a set of international standards for environmental management systems. This is intended to promote environmental preservation, an important aspect of Responsible Care.

Daicel is promoting the spread of environmental management systems throughout Other Group Companies. To date, two of the Other Group Companies—namely, Polyplastics Co., Ltd. and Daicel Novafoam Ltd.—have acquired the ISO14001 certification. During fiscal 2010, Dainichi Chemical Corp. acquired Eco Action 21 certification.

Furthermore, the workplaces of Group companies within the premises of Daicel plants are engaged in targeted ISO 14001 activities specific to each plant. These workplaces have been certified together with the Daicel plants in which they operate.

What is...? **Eco Action 21:** Environmental management systems promoted by the Ministry of the Environment of Japan. These systems are designed for easy implementation by small- and medium-sized corporations. The Institute of Global Environmental Strategies Center for Sustainability (IGES-CfS) serves as the registrar of the certification.

ISO14001 Certification Status (Plants and Research Centers)

Plant/Research Center	Acquisition Date	Certificate No.
Ohtake Plant	August 1999	JQA-EM0492
Central Research Center	June 2000	JQA-EM0894
Aboshi Plant	December 2000	JQA-EM1229
Hirohata Plant (as Daicel Polymer Ltd.)	April 2001	JQA-EM1511
Harima Plant	July 2001	JQA-EM1683
Kanzaki Plant	December 2001	JCQA-E-0329
Arai Plant	December 2001	JCQA-E-0339

ISO14001 Certification Status (Other Group Companies)

Group Company	Acquisition Date	Certificate No.
Polyplastics Co., Ltd. (R&D Center)	February 1999	JQA-EM0337
Polyplastics Co., Ltd. (Fuji Plant)	April 1999	JQA-EM0414
Daicel Novafoam Ltd. (Head Office and Nagano Plant)	February 2003	C2003-00362/Perry Johnson Registrars Inc.
Daicel Novafoam Ltd. (Okayama Plant)	June 2004	C2004-01523/Perry Johnson Registrars Inc.

The Daicel Group's Responsible Care Targets and Results

Daicel's Responsible Care Targets and Results

Area		Fiscal 2010 Target	Fiscal 2010 Result	Achievement rate*	Fiscal 2011 Target	Medium-Term Target (Fiscal 2011 to Fiscal 2013)	Page
Environmental Preservation	Respond to the Kyoto Protocol Target Achievement Plan	Continue activities to improve our average per-unit energy consumption for fiscal 2008-2012 by 20% compared with the 1990 level	Improved per-unit energy consumption by 17% from the 1990 level. Also, improved per-unit energy consumption index by 7% through increased use of waste tires (recycled fuels) and enhanced facility utilization	○	Maintain effective companywide energy management systems Reduce per-unit energy consumption by 1% or more from the fiscal 2010 level • Introduce new gas turbines for generation boilers • Increase fuel conversion using waste tires and palm shells	Continue to reduce per-unit energy consumption by 1% every year	P40
		Continue to promote energy-saving activities at employees' households and report results to the Japan Chemical Industry Association (JCIA)	Continued to promote household energy-saving activities. However, data compilation was discontinued in December 2010. CO_2 emission reductions totaled 2,355 tons	○	Regularly provide information on the status of household energy-saving activities and further promote these activities	Continue to promote household energy-saving activities	P41
	Implement a medium-term plan to reduce the amount of waste	Keep the final landfill disposal index below 20% (with the 1990 level set at 100)	Kept the index at around 5% (1,169 tons) and achieved the target	○	Promote activities to prevent increases in final disposal by landfill (Daicel has already satisfied the target set under the Keidanren Voluntary Action Plan on the Environment of the Japan Business Federation of reducing the final disposal by landfill in fiscal 2015 to 35% of the fiscal 2000 level.)	Continue to promote activities to prevent increases in final disposal by landfill	P41
Process Safety and Disaster Prevention	Eliminate all fire, explosion, leakage accidents	Continue to implement measures to minimize disaster risks and eliminate all fire, explosion and leakage accidents	• Began strengthening the review of Total EHS Assessment System to minimize risks in new plans • Currently conducting first-stage earthquake-resistance evaluation in accordance with the Act on Promotion of Seismic Retrofitting of Buildings • Performed work to correct defect in wastewater discharge facilities at Ohtake Plant	△	Continue to implement measures for countering earthquakes, tsunamis and other disasters and to strengthen the review of Total EHS Assessment System	Continue activities to eliminate fire, explosion and leakage accidents • Promote strict risk management • Strengthen Total EHS Assessment System and encourage employees to comply with related internal rules Continue to enhance disaster response capabilities • Improve emergency call and other systems • Review procedures for countering large-scale disasters	P44
		Continue to strengthen disaster response capabilities	Compiled plans to introduce emergency earthquake alert and emergency call systems	○	Introduce emergency earthquake alert and emergency call systems and review existing procedures for countering large-scale disasters		
Occupational Health and Safety	Eliminate labor accidents	Promote 3S, hazard prediction and crisis-identification activities	Improved occupational safety performance through the promotion of 3S, hazard prediction and crisis-identification activities as well as through the prevention of similar accident and the standardization of rules	○	Promote 3S, hazard prediction and crisis-identification activities (assign new and mid-career employees to identifying issues)	Continue activities to eliminate labor accidents • Promote 3S, hazard prediction and crisis-identification activities • Strengthen measures to prevent similar accidents and identify true causes • Standardize safety rules	P43
		Continue to administer the Safety Alert Database to prevent similar accidents	Analyzed troubles using the Safety Alert Database, with results communicated to plants	○	Prevent similar accidents through the use of the Safety Alert Database (prevent human errors)		
		Continue the standardization of basic actions and safety rules across the board	Standardized companywide rules for the use of protective glasses, for high-place work and for the transport of methyl monochloroacetate	○	Promote the standardization of basic actions and safety rules across the board		
Distribution Safety	Eliminate logistics accidents (cooperation with Daicel Logistics Service Co., Ltd.)	Eliminate at-fault logistics accidents and halve the number of logistics-related troubles	One tank truck accident occurred. Conducted driver awareness surveys and safety training to prevent recurrence. In cooperation with Daicel Logistics Service, worked to reduce the number of logistics-related troubles	×	Enhance monitoring of and guidance to partner companies (vehicles and routes) and improve checklists for product inspection	Eliminate at-fault logistics accidents Halve the number of logistics-related troubles	P44
		Disseminate and administer the Logistics Safety Control Rules	Each business site formulated or revised their Logistics Safety Control Rules and started full-scale administration	○	Hold logistics safety meetings regularly to monitor the status of the Logistics Safety Control Rules and promote effective administration		
		Promote energy saving as a Specified Shipper defined under the Energy Saving Law and report results regularly	Promoted modal shift by increasing use of domestic container ships. Per-unit energy consumption decreased about 3% from fiscal 2009 even though transport volume increased. This achievement will be included in relevant reports	○	Promote energy-saving measures, such as increasing transport units and decreasing drayage transport, and prevent worsening per-unit energy consumption in inefficient logistics operations possibly caused by increased transport volume Note: Drayage transport refers to the surface transport of containers by truck from ships and railways to their destinations (surface transport tends to consume more energy than marine transport).	Continue to achieve over 1% annual energy saving in logistics operations	
Chemical and Product Safety	Comply with European regulations on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)	Monitor the status of Substance Information Exchange Forum (SIEF) and complete the REACH registration for pre-registered products with annual tonnage of over 1,000 tons	Completed registration for pre-registered products. To strengthen chemical substance information management, established an in-house chemical substance information management databank (name: D-CLik) and began companywide administration	○	Prepare for REACH registration for products with annual tonnage of 100 to 1,000 tons before the deadline in May 2013	Continue to comply with REACH and other domestic and overseas regulations relating to chemical management	P39
	Reduce emissions of volatile organic compounds (VOCs)	Reduce VOC emissions by 30% from the fiscal 2000 level	Reduced emissions of acetone, a major VOC. However, emissions of other VOCs increased due to increased production. As a result, VOC emissions decreased 24% from the fiscal 2000 level	○	Reduce 30% from the fiscal 2000 level and promote measures for further reductions	Reduce 40% from the fiscal 2000 level	
	Reduce emissions of pollutant release and transfer register (PRTR) substances	Continue reducing the emissions of PRTR substances	Emissions increased 42 tons year on year to 156 tons, reflecting the designation of new PRTR substances and increases in existing PRTR substances	△	Promote measures to reduce 40% from the fiscal 2001 level	Reduce 40% from the fiscal 2001 level	
Dialogue with Society	Publish reports and promote communication with local communities	Disclose information on the Responsible Care Initiative promoted by Group companies to expand the scope of reporting to the entire Daicel Group	Included environmental impact data on Other Group Companies in the CSR Report 2010. In addition, the Company's environmental performance indicators were disclosed in the CSR Library section on its website	○	Continue the disclosure of environmental performance indicators for Other Group Companies	Continue the disclosure of information regarding the Responsible Care Initiative promoted by Group companies including those located overseas	P40 P50

Other Group Companies' Responsible Care Targets and Results

Area	Fiscal 2010 Target	Fiscal 2010 Result	Achievement rate*	Fiscal 2011 Target	Medium-Term Target (Fiscal 2011 to Fiscal 2013)	Page
Environmental Preservation	Set targets at Other Group Companies and promote energy-saving activities	In line with the revised Energy Saving Law, established Groupwide systems to manage the Other Group Companies designated as Specified Shippers. Reduced per-unit energy consumption by 1% from the fiscal 2009 level. Achieved over 1% annual energy saving in logistics operations	○	Reduce per-unit energy consumption by 1% or more from the fiscal 2009 level (in logistics divisions, achieve over 1% annual energy saving in their operations)	Reduce per-unit energy consumption by 1% every year (in logistics divisions, achieve over 1% energy saving every year)	P40
	Start energy-saving activities at employees' households and report implementation status as the Daicel Group to the JCIA	Started energy-saving activities at employees' households, resulting in total CO_2 emissions reduction of 616 tons (per-capita maximum average reduction: 1.03 kg/day) (Please see the graphs on page 41.)	○	Regularly provide information on the status of household energy-saving activities and further promote these activities	Continue to promote household energy-saving activities	P41
	Continue 3R activities for industrial waste	Promoted recycling of waste plastics and solvents, reduced waste by improving the defect rate and bolstered recycling activities	○	Continue 3R activities for industrial waste Establish effective industrial waste management systems	Continue 3R activities for industrial waste	
Occupational Health and Safety	Promote 3S, hazard prediction and crisis-identification activities	Despite promotion of these activities, the number of labor accidents at domestic Group companies increased from fiscal 2009	△	Promote 3S, hazard prediction and crisis-identification activities on a Groupwide basis	Promote 3S, hazard prediction and crisis-identification activities	P43
Process Safety and Disaster Prevention	Strengthen disaster response capabilities	Completed the preparation of emergency response guidelines at Group companies	○	Continue the effective administration of emergency response guidelines	Continue to strengthen disaster response and risk management capabilities	P44
	Promote activities to minimize risks	Conducted Total EHS Assessment System for Class I plans (new plans with a profound impact on corporate management)	○	In addition to Class I plans, conduct Total EHS Assessment System for all small-scale retrofitting plans		

* Achievement rate: ○: 100 to 70%; △: 70 to 40%; ×: 40 to 0%

TOPICS

10th Daicel Group Responsible Care Promotion Assembly (April 7, 2011)

With the aim of instilling Responsible Care philosophy and policies throughout the Daicel Group and improving related activities, we started to hold the Daicel Group Responsible Care Promotion Assembly in fiscal 2000. Fiscal 2011 marked the 10th event.

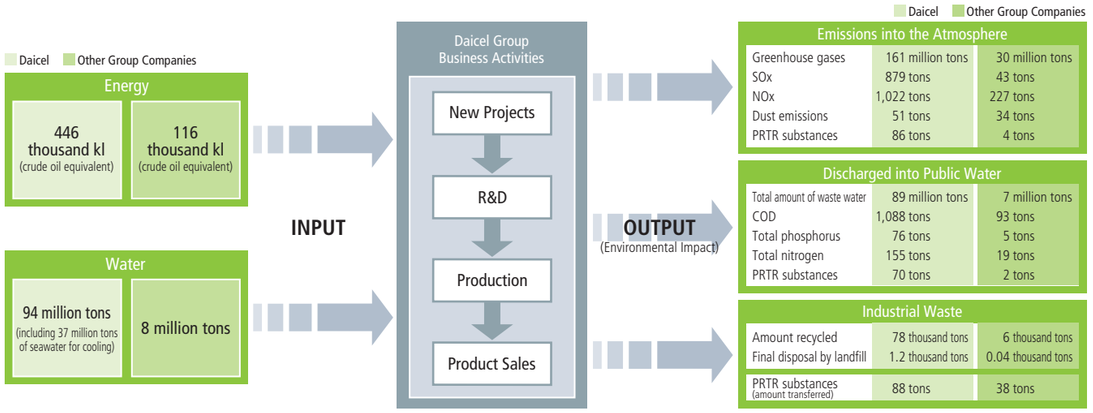
More than 60 participants—including Daicel's top management, representatives and other employees involved with the Responsible Care Initiative—gather at this assembly every year. At the beginning of this year's assembly, the participants prayed for safety and made a safety declaration in line with the spirit of the "Industrial Safety Campaign Century Project" promoted by Nippon Keidanren (the Japan Business Federation) and other organizations. For details of this event, please see page 43 of this report.

Groupwide Earthquake Countermeasure Meeting

In response to the Great East Japan Earthquake on March 11, 2011, we used the second half of the Responsible Care Promotion Assembly to hold a meeting of the Groupwide Earthquake Countermeasure Council.

Chaired by the Company's president and CEO, this council consists of all related divisions and Group companies. Through the council, the Company promotes Groupwide communication of information on raw materials and products while facilitating information exchange, reviewing investigation requests provided by the Japanese government and implementing necessary measures. As of May 2011, the Company is continuing various activities through this council, including measures to cope with possible electricity shortages in coming summer.

Business Activities and Their Environmental Impact



Environmental Accounting

Daicel has introduced an environmental accounting system with the goal of implementing efficient environmental preservation activities, ensuring further corporate transparency, and quantitatively assessing and evaluating the investments, costs, and effectiveness of our environmental preservation activities.

With the aim of contributing to the prevention of global warming, the entire Daicel Group promoted energy-saving activities. As a result, Daicel was able to reduce crude oil-equivalent energy consumption by 25 thousand kiloliters. This amount accounts for 5.7% of total energy used in Daicel's business activities during fiscal 2010.

During the reporting term, Daicel established an Energy Conservation Committee. Through this Committee, the Company will continue to promote energy-saving activities. The quantitative results (effects on environmental preservation) are summarized in the sections, "The Daicel Group's Responsible Care Targets and Results" (pages 36 to 37) and "Environmental Preservation" (pages 40 to 42).

Environmental Preservation Costs

Classification		Major Initiatives	Amounts Invested (¥ million)	Cost (¥ million)
1. Environmental preservation costs of controlling the environmental impact of our production and service operations that occur within business areas (business area costs)			585	3,445
Breakdown	(1) Pollution prevention costs	Prevention of air and water pollution, control of harmful substances, levies for pollution-related health damages	263	2,126
	(2) Global environmental preservation costs	Energy conservation, capital expenditures for fuel conversion, cost of thermal pinch analysis	252	75
	(3) Resource recycling costs	Appropriate treatment and disposal of industrial waste	70	1,244
2. Costs of controlling the environmental impact of production and service operations occurring upstream or downstream (upstream and downstream costs)		Costs of recycling containers and packing materials and green purchasing	0	21
3. Environmental preservation costs in management activities (environmental management costs)		Labor costs of environmental management, expenses for EMS operations and maintenance, costs of environmental education, costs of environmental impact alleviation	0	492
4. Environmental preservation costs in R&D activities (R&D costs)		R&D work for reducing the environmental impact of products and technologies	56	105
5. Environmental preservation costs in community activities (community activities costs)		Costs of environmental promotion activities and participation in community events	0	32
6. Costs of environmental damage (environmental damage costs)		Environmental remediation costs, compensation for damages related to environmental preservation, and insurance premiums and transfers to reserves for environmental damage	1	4
Total			642	4,099

Item	Amount (¥ million)	Environmental Rate (%)
Capital expenditures in the applicable period	4,723	13.6
R&D expenditures in the applicable period	8,126	1.3

Economic Effects (Monetary Benefits) Resulting from Environmental Preservation Activities

Item	Amount (¥ million)
1. Cost reduction through energy conservation	166
2. Improvement of total thermal efficiency through in-house power generation	2,477
3. Cost reduction through resource conservation	253
4. Benefits obtained by recycling	297
5. Reduction of expenses for waste treatment or disposal	13
Total	3,206

Time period for reported totals: April 2010 to March 2011
Calculation method for reported totals: Calculated according to the Environmental Accounting Guidelines, Year 2005 Edition, published by the Ministry of the Environment of Japan, and the Environmental Accounting Guidelines for the Chemical Industry, published by the Japan Chemical Industry Association (JCIA)
Amounts invested: Actual sums for capital investment in environmental preservation in fiscal 2010
Cost amounts: The totals for actual expenses of equipment depreciation, maintenance, management, and labor related to environmental preservation
Economic effects resulting from environmental preservation activities: Indicated as monetary benefits only and does not include risk avoidance effects or de facto effects. Economic effects attributable to reductions in energy costs are presented by annualizing the effects of energy cost reductions realized through energy-saving initiatives actually implemented during fiscal 2010.

Chemical and Product Safety

Reduction of VOC Emissions

Regarding acetone, a major volatile organic compound (VOC), capital investment upgraded the facilities generating this compound. As a result, the Company was able to limit the increase in acetone emissions attributable to increased production. On the other hand, in line with increased production, emissions of toluene, methyl ethyl ketone and ethyl acetate increased. Accounting for these factors, Daicel's VOC emissions decreased 24% from the fiscal 2000 level. In fiscal 2011, we aim to reduce VOC emissions by 30% compared with the fiscal 2000 level.

Management of PRTR Substances' Emissions and Transfers and Reduction of Their Emissions

Daicel has voluntarily participated in JCIA's Pollutant Release and Transfer Register (PRTR) project to control PRTR substance emissions and amounts transferred. During fiscal 2010, emissions increased, reflecting increased production, the postponement of an emissions reduction project to fiscal 2011 and, in line with regulatory amendments, the inclusion of new substances—including n-hexane and 1-bromopropane—in the PRTR scheme. Daicel will continue activities to reduce the amounts of emissions and transfers to achieve its medium-term targets.

web www.daicel.com/rescare/index.html

Totals of PRTR substance emissions and transfers by Other Group Companies are presented on page 38 of this report.

Appropriate Control of PCBs

In compliance with Act on Special Measures Concerning Promotion of Proper Treatment of PCB Wastes, Daicel conforms to appropriate practices for the storage of capacitors, transformers and other machinery containing polychlorinated biphenyls (PCBs). During fiscal 2010, the Company employed the Japan Environmental Safety Corporation (JESCO) and properly disposed of such PCB-contaminated machinery.

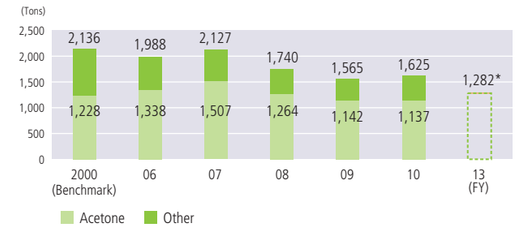
Enhancement of Chemical Substance Information Management

In 2006, the UN Environmental Program approved a Strategic Approach to International Chemicals Management (SAICM) to promote appropriate management of chemicals. Since then, chemicals management has been reinforced in Japan and overseas. To effectively respond to such regulatory developments and continue to provide customers with product safety information, Daicel has established an in-house chemical substance information management databank named D-CLik, which is being promoted throughout the Group. D-CLik stores a wide range of information, including safety and hazard data on products and substances handled, data on related laws and regulations and related reports obtained by the Company.

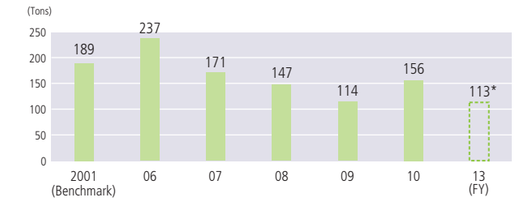
Responding to the EU's REACH Regulation

Daicel has advanced activities to ensure that its products exported to the EU comply with the REACH Regulation. Before the deadline set at the end of November 2010, the Company completed the registration of its chemical products exported to the region in the volume of 1,000 tons or larger per annum with the European Chemicals Agency. Looking ahead, the Company aims to complete the registration of its chemical products exported to the region in volumes of 100 to 1,000 tons per annum by the end of May 2013. To this end, Daicel is strategically conducting safety assessments for applicable products.

Daicel's VOC Emissions

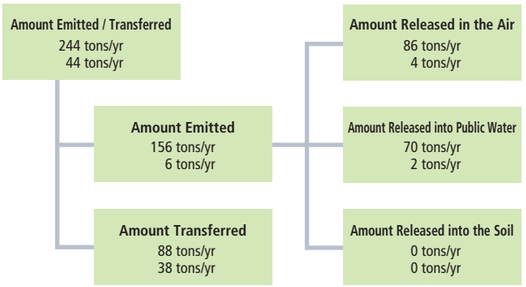


PRTR Substance Emissions



*Target (total amount) for fiscal 2013, the final year of Daicel's medium-term plan

Emissions and Transfers of PRTR Substances in Fiscal 2010



*Upper figure: Daicel Lower figure: Other Group Companies

What is...?

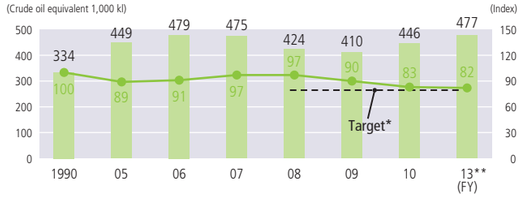
Pollutant Release and Transfer Register (PRTR): A system to calculate the extent to which the production, use, and storage of specific chemical substances results in the release and transfer of those substances into the environment.

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation: An EU regulation obliging producers to register, evaluate, authorize and restrict the use of chemical substances.

Environmental Preservation

To steadily achieve annual 1% improvements of its per-unit energy consumption in accordance with the revised Law Concerning the Rational Use of Energy (revised Energy Saving Law), Daicel has established an Energy Conservation Committee.

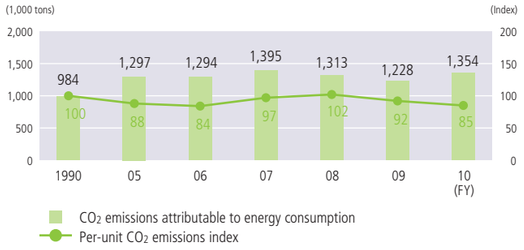
Energy Consumption and Rate Index

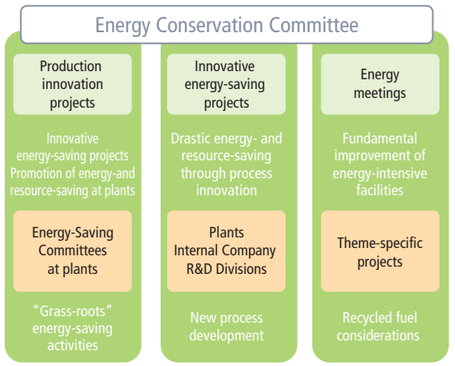


* The Japan Chemical Industry Association (JCIA) has set a target for average per-unit energy consumption index between 2008 and 2012 at 80 with the 1990 level set as 100.

**Target for fiscal 2013, the final year of Daicel's medium-term plan

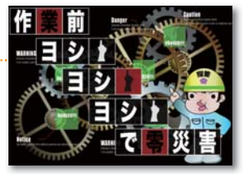
CO_2 Emissions Attributable to Energy Consumption and Per-Unit CO_2 Emissions Index





PJ: Project

Award-winning poster (Fiscal 2010 Responsible Care Poster Contest)



Yousuke Terao

Life Sciences Development Center,
CPI Company, Arai Plant)

Global Warming Prevention and Energy Conservation

Daicel has participated in "Nippon Keidanren's Commitment to a Low Carbon Society" and is working to reduce its CO_2 emissions to achieve the industry-specific reduction target set under the Commitment for the year 2020.

In fiscal 2009, impacted by rapid deceleration of the global economy, Daicel's output decreased significantly. Having recovered from this downturn, Daicel experienced an increase in production in fiscal 2010, which resulted in an increase in energy consumption. Daicel's CO_2 emissions attributable to energy consumption rose 130,000 tons year on year to 1,350,000 tons.

The Company's per-unit energy consumption index stood at 83, an improvement of 7 points from fiscal 2009. This improvement reflects our efforts to increase the use of waste tires and other recycled fuels in boilers and promote various energy-saving measures as well as enhanced facility utilization owing to increased production. Similarly, per-unit CO_2 emissions showed a 7-point improvement to 85.

Also, during the reporting term, Daicel conducted tests on the possible use of palm shells—waste generated through palm oil extraction—as fuel. Through these tests, we have confirmed that palm shells can be used as fuel. In fiscal 2011, based on the test results, we plan to start using palm shells as fuel.

Crude oil-equivalent energy consumption of Other Group Companies totaled 116,000 kiloliters, while CO_2 emissions totaled 300,000 tons. Currently, Daicel is preparing for the disclosure of energy consumption, CO_2 emissions and other environmental performance data of its overseas Group companies for fiscal 2012.

Establishment of A Structure to Promote Energy Saving

Fiscal 2010 saw the enactment of the Act on the Rational Use of Energy. Before the revision, energy consumption was managed on a workplace basis. The revision encourages managing energy consumption on a companywide basis. In response to this regulatory change, Daicel has established an Energy Conservation Committee as the central body to effectively promote and manage companywide energy-saving activities.

This committee is responsible for setting related targets and managing progress as well as organizing necessary promotion systems and implementing plans for optimizing energy use.

What is…?

Per-unit value: This value indicates the efficiency of certain indicators. For example, when energy consumption is used as the indicator, efficiency is presented as "per-unit energy consumption" to show the total consumption of electricity, thermal energy and fuels required for manufacturing a specified unit products. Smaller per-unit energy consumption indicates higher production efficiency—in other words, greater energy efficiency—which in turn presents greater potential for preventing global warming.

Per-unit value index: This index is used to show trends in per-unit values over several years by adopting the per-unit value of a standard year as a benchmark. For example, when energy consumption is used as the indicator, per-unit energy consumption index can be obtained by the following formula:

Per-unit energy consumption index for a year = Per-unit energy consumption for that year/ Per-unit energy consumption in the standard year × 100

Daicel believes that each and every one of us must tackle global warming prevention. In line with this belief, we encouraged our Group employees to promote household energy-saving activities.

Energy-Saving Activities at Employees' Households

Daicel has promoted household energy-saving activities since fiscal 2009 to reduce CO_2 emissions in the household sector. From fiscal 2010, the Company expanded these activities throughout the Daicel Group.

As a result, with a total of 10,000 participants, including Group employees and their family members, the per-capita CO_2 emissions reduction exceeded 0.9 kilogram per person per day, and the aggregate CO_2 emissions reduction totaled 2,971 tons. Looking ahead, Daicel will continue to implement educational activities to promote energy saving in the household sector.

What is…?

Household energy-saving activities: In fiscal 2009, annual CO_2 emissions in the household sector amounted to approximately 160 million tons, accounting for 14% of the total CO_2 emissions in Japan. Energy saving in this sector has become an important issue. As part of efforts to promote household energy-saving activities, Daicel has participated in the Accelerated By Chemical Industry for Cool Earth (ABC) Activity organized by the Japan Chemical Industry Association (JCIA). In fiscal 2009, the Company received an ABC Activity Award, along with eight other winners.

Reduction and Recycling of Industrial Waste

In fiscal 2010, the total amount of industrial waste generated by Daicel totaled 119,464 tons, a year-on-year increase of 16,420 tons. Total final disposal by landfill decreased 96 tons to 1,169 tons.

Daicel encourages its plants to achieve zero emissions, which means that less than 1% of the total amount of industrial waste is disposed of in landfill. In fiscal 2010, the Aboshi, Ohtake, Hirohata and Harima plants achieved zero emissions again, as they did in fiscal 2009. Nippon Keidanren is now targeting a reduction in final disposal by landfill during fiscal 2015 to 35% of the fiscal 2000 level. The Company has already satisfied this target. Accordingly, we will promote activities to prevent increases in final disposal by landfill.

Daicel is working to reduce industrial waste generation while taking appropriate steps to comply with amendments to the Waste Management and Public Cleansing Law of Japan.

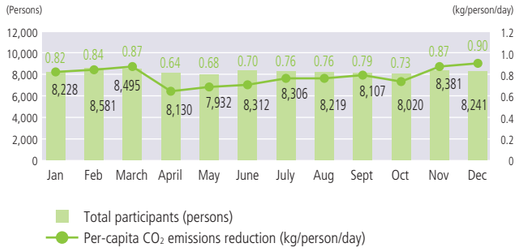
The total amount of industrial waste generated by Other Group Companies amounted to 7,494 tons, and the total final disposal by landfill attributable to Other Group Companies amounted to 41 tons. Also, Polyplastics Co., Ltd., Daicel Logistics Service Co., Ltd., Daicel Novafoam Ltd. and Dainichi Chemical Corp. have achieved zero emissions.

What is…?

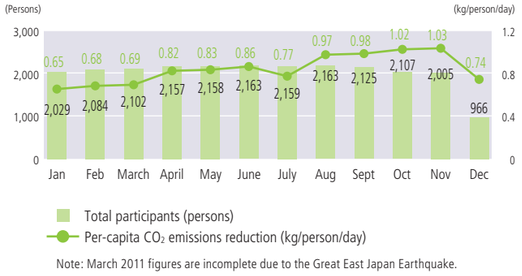
Recycling rate: This term represents the ratio of the amount of reused and recycled waste to the amount of waste generated or emitted. Daicel defines the term as the ratio of the amount of reused and recycled waste (including heat recovery) by Daicel and by treatment contractors to the amount of industrial waste generated.

3R: This term refers to activities to reduce waste generation, reuse reusable resources and recycle resources.

2010 Results of Household Energy-Saving Activities (Daicel)



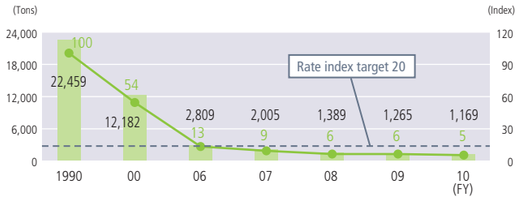
2010 Results of Household Energy-Saving Activities (Other Group Companies)



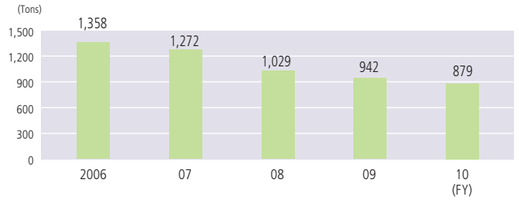
Note: March 2011 figures are incomplete due to the Great East Japan Earthquake.

Amount of Industrial Waste Generated and Recycling Rate

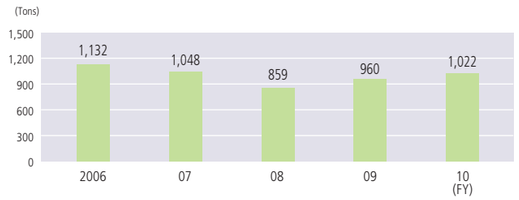
Final Disposal by Landfill and Ratio to Total Industrial Waste



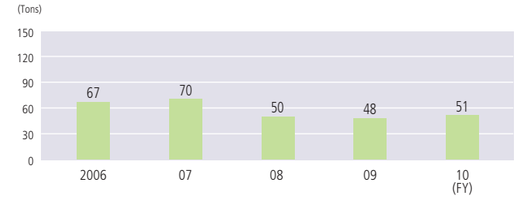
SOx Emissions



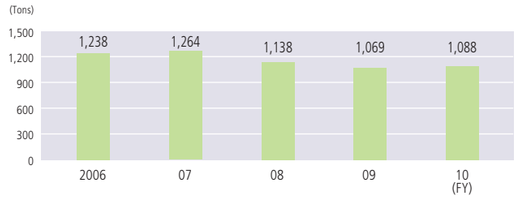
NOx Emissions



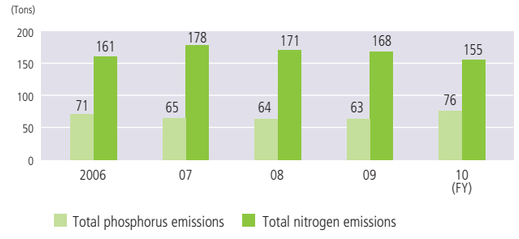
Dust Emissions



COD Emissions



Total Phosphorus and Total Nitrogen Emissions



Environmental Management to Prevent Air and Water Pollution

Daicel is working to maintain appropriate environmental management systems to satisfy regulatory requirements defined under the Air Pollution Control Act and the Water Pollution Control Act as well as requirements determined through negotiations with local governments and municipalities. In fiscal 2010, Daicel's emissions of NOx slightly increased. Overall, however, the Company's environmental burden on the air and water remained almost unchanged year on year. The Company performed work to correct a defect in the wastewater discharge facilities at Ohtake Plant.

Other Group Companies complied with all regulatory requirements and other requirements while implementing appropriate measures to comply with related laws and regulations by preparing and maintaining accurate measurements, records and reports.

T O P I C S

Initiatives Aimed at Preserving Biodiversity

Biodiversity provides numerous direct and indirect benefits every day, yet human activities are placing significant stress on the Earth's ecosystems. This stress is causing a rapid increase in endangered species, threatening biodiversity.

Protecting biodiversity and using biological resources in a sustainable manner is indispensable to enable future generations to benefit from nature's richness. In line with these requirements, Daicel has promoted R&D activities that comply with the Law concerning the Conservation and Sustainable Use of Biological Diversity through Regulations on the Use of Living Modified Organisms (Cartagena Protocol).

In fiscal 2010, Daicel added a new clause to its Basic Policies for Responsible Care in order to clarify its stance toward biodiversity protection. Also, Daicel joined the Japan Business and Biodiversity Partnership, which was jointly established by Nippon Keidanren, the Japan Chamber of Commerce and Keizai Doyukai (the Japan Association of Corporate Executives) on the 10th Conference of the Parties (COP10) to the Convention on Biological Diversity in October 2010 in Nagoya, Japan.

Occupational Health and Safety

The number of labor accidents with/without lost workdays for all workplaces declined for the fourth consecutive year, resulting in an improvement in the labor accident frequency rate to 1.38 (JCIA average: 2.05).

At all of its workplaces, Daicel has promoted various activities to upgrade the foundation of production sites—the base of new value creation. These include 3S* activities, crisis-identification activities, hazard prediction activities and operational training programs at the Operation Training Center. Also, the Company has implemented various measures to prevent the occurrence of labor accidents and the recurrence of similar accidents at all of its workplaces through the Safety Alert Database, which is used by both management and employees.

Thanks to these measures, for fiscal 2010, Daicel was able to reduce the number of both categories of labor accidents (with/without lost workdays) for the fourth consecutive year. There were two accidents involving lost work days and ten that did not. These figures include partner companies operating on the premises of Daicel plants. As a result, the Company's accident frequency rate has improved and is lower than the average rate for all JCIA member companies.

In fiscal 2010, Daicel also began holding hazard prediction activities placing particular emphasis on human factors. Through these activities, the Company is working to reduce the number of labor accidents and prevent serious labor accidents.

For Other Group Companies, the number of accidents accompanied by lost workdays totaled two, while those not involving lost workdays stood at four, an increase overall year on year. To improve situations at Other Group Companies, we will further promote 3S activities and "Why & Why Analysis" activities.

**Seiri* (tidying), *seiton* (putting everything in order) and *seisou* (cleaning).

T O P I C S

Daicel Commemorates Its Participation in the "Industrial Safety Campaign Century Project"

At the 10th Daicel Group Responsible Care Promotion Assembly held in April 2011 (see also page 37), Daicel announced its participation in the "Industrial Safety Campaign Century Project" project promoted by Nippon Keidanren and other organizations and held a commemorative event at the assembly.

Representatives of Daicel and Group companies joined this commemorative event. At the event, the participants took a moment of silence in the hope of ensuring safety in business operations over a century. This was followed by a "Safety First" declaration by President Misao Fudaba. This event was introduced on the commemorative website operated by the "Industrial Safety Campaign Century Project" Project Implementation Committee, which is organized by Nippon Keidanren Federation and other organizations.

What is...?

Hazard prediction: Near-accident and near-trouble events are recorded to identify the causes of these events. Hazard prediction activities help eliminate causes of accidents and troubles to create safer working environments.

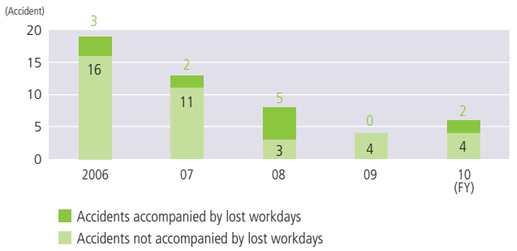
Accident frequency rate: A safety index to show the labor accident occurrence rate calculated with the following formula:

Accident frequency rate = Number of people involved in labor accident/Number of total extra working hours (unit: millions of hours)

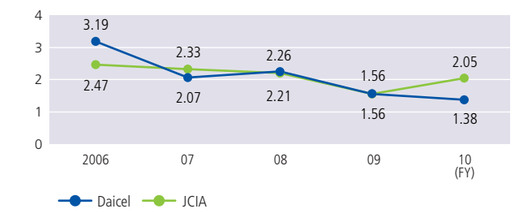
"Industrial Safety Campaign Century Project": In 1912, Mr. Masayuki Odagawa—General Manager of the Ashio Copper Mine operated by the predecessor of Furukawa Mining Co., Ltd. (current: Furukawa Co., Ltd.)—started safety activities by posting safety signs within the mine. These signs said "Safety First" to enhance the safety awareness of mine workers. This initiative is believed to be the origin of the numerous voluntary safety activities conducted by Japanese companies today.

Labor Accidents at Daicel (including partner companies on plant premises)

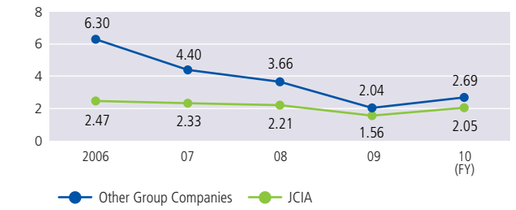
Labor Accidents at Other Group Companies



Accident Frequency Rate at Daicel (including partner companies on plant premises)



Accident Frequency Rate at Other Group Companies



Award-winning poster (Fiscal 2010 Responsible Care Poster Contest)

Satoko Kimura

Quality Assurance, Organic Chemical Products Company, Arai Plant

The Responsible Care Initiative

Process Safety and Disaster Prevention

Continued Achievement: Zero accidents involving fire or explosion

General disaster drill at the Ohtake Plant (March 7, 2011)

During fiscal 2010, Daicel again achieved zero fire and explosion accidents. Stable plant operations made the difference. To achieve stable plant operations, the Company promotes various activities to improve safety, implements general operability studies, conducts Total EHS Assessment and other systems and carries out other activities aimed at reducing plant troubles and risks. These activities were promoted at all of the Company's workplace during fiscal 2010.

More specifically, our action plans for fiscal 2010 included activities to reduce risks relating to fire and explosion accidents, many of which occurred at other companies in fiscal 2009 and the fiscal year under review, as well as to natural disasters such as earthquakes. The progress of these action plans was regularly monitored at meetings on the Company's Responsible Care Initiative and through Responsible Care Audits. In addition to existing safety and emergency drills conducted at each workplace, we began considering the introduction of emergency earthquake alert and emergency call systems assuming large-scale disasters affecting a broad region with the aim of reinforcing the Company's disaster response capabilities. We plan to start trial operation of these systems during fiscal 2011 to verify their effectiveness.

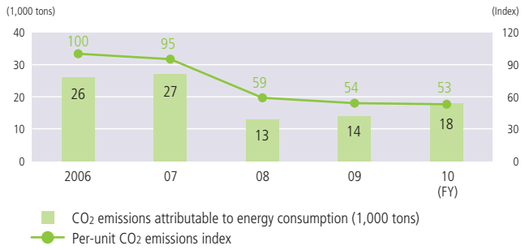
What is…? **General operability studies:** Daicel's proprietary method of codifying the advanced skills of veteran operators from safety, stability, quality and cost perspectives and standardizing procedures to be used in the event plant operations change. Upon identification of irregular plant operations, decision-making processes are codified at each stage, from identifying possible causes to minimizing the impact of the event.

The Responsible Care Initiative

Distribution Safety

We are continuing activities aimed at reducing logistics-related troubles while working aggressively to reduce CO_2 emissions in logistics operations.

Daicel's CO_2 Emissions in Logistics Operations



Award-winning poster (Fiscal 2010 Responsible Care Poster Contest)

Yoshikazu Takata

Manufacturing Department, No.1, Manufacturing Center, Aerospace & Defense Systems Division, Aerospace & Defense Systems/Safety Systems Company, Harima Plant

What is…? **Modal shift:** This term refers to changing the mode of transportation from trucks to ships, railway vehicles and other forms with less environmental burden.

Daicel Logistics Service Co., Ltd. is in charge of the logistics operations of the Daicel Group. Daicel Logistics Service has promoted such safety activities as the establishment of guidelines and manuals and the implementation of accident drills under the goal of eliminating at-fault logistics accidents. During fiscal 2010, however, one tank truck accident occurred, and we failed to achieve our target. In fiscal 2011, we are determined to eliminate all logistics accidents and troubles. To this end, we plan to establish a training center where our tank truck drivers will receive training to upgrade their skills. Also, we will provide more guidance to partner companies to prevent the occurrence of similar accidents and troubles.

For fiscal 2010, CO_2 emissions in the Company's logistics operations increased approximately 4,000 tons year on year in line with an increase in transportation volume. However, reflecting the implementation of modal shifts, the constant utilization of containers at full capacity and the use of larger vehicles for transportation, per-unit CO_2 emissions showed an improvement. Furthermore, the Company achieved an approximately 3% year-on-year improvement in per-unit energy consumption in logistics operations in response to the revised Energy Saving Law. These results will be reported to the Kinki Bureau of Economy, Trade and Industry.

CSR Initiatives Report

Quality Assurance

All of Daicel's plants have acquired ISO9001 certification, a set of international standards for quality management systems. Each constantly works to offer products that satisfy customers and meet their needs. Each internal company is responsible for the quality of their products. Relevant officials from plants and corporate departments attend regular quality assurance meetings held at each internal company to share information, including customer requests. Moreover each internal company works closely with Daicel's headquarters and plants to leverage the Group's quality management system and thus ensure the maintenance and improvement of product quality across the Group.

Furthermore, in pursuit of safer and more user-friendly products, we are addressing the issue of acquiring certifications of quality management standards as well as meeting the legal requirements in each field for the following product lineups:

- Airbag inflators: Acquired ISO/TS 16949 certification (quality management system standards for the automobile industry)
- Special machinery products: Acquired JISQ 9100 certification (quality management system standards for the aerospace industry)
- Medical and pharmaceutical products: Implementing production and quality control under an organization and administration standard based on Good Manufacturing Practice (GMP) rules for the manufacturing, management and quality control of pharmaceutical products
- Food additives (sorbic acid and potassium sorbate): Meeting the AIB Consolidated Standards for Food Safety

What is…? **AIB Consolidated Standards for Food Safety:** AIB stands for American Institute of Baking. These are the standards set by the AIB regarding the management of food safety.

Status of ISO9001 Acquisition

(As of March 31, 2011)

Plant/Group Company	Certificate No.	Certificate/Edition	Expiration	Updating Status
Aboshi Plant, Himeji Production Sector	JQA-0953	ISO9001:2008	2012.9.18	Completed
Hirohata Plant, Himeji Production Sector	JQA-QM4647	ISO9001:2008	2013.2.26	Completed
Harima Plant, Aerospace & Defense Systems Division, Aerospace & Defense System/ Safety Systems Company	BSK0027/ BSKA0028	JISQ9100:2004 JISQ9001:2008	2014.4.14	Completed
Harima Plant, MSD Division, Aerospace & Defense Systems/ Safety Systems Company	JQA-2448	JISQ9001:2008	2013.4.22	Completed
Kanzaki Plant, Daicel Value Coating Ltd.	JCQA-0530	ISO9001:2008	2011.8.1	Completed
Arai Plant	JCQA-0136	ISO9001:2008	2011.6.2	Completed
Ohtake Plant	JQA-1023	ISO9001:2008	2013.10.26	Completed
Polyplastics Co., Ltd.	JQA-1283 JQA-AU0071	ISO9001:2008 ISO/TS16949:2009	2012.12.25 2012.12.10	Completed
Daicel Safety Systems Inc.	JQA-AU0033	ISO/TS16949:2009	2013.4.15	Completed
Daicel Pack Systems Inc.	JQA-QMA-11465	ISO9001:2008	2011.7.1	Completed
Aboshi Plant, Daicel-Evonik Ltd.	JQA-2481	ISO9001:2008	2013.8.5	Completed
Nagano Plant, Daicel Novafoam Ltd.	ASR-Q1169	ISO9001:2008	2011.7.7	Completed
Okayama Plant, Daicel Novafoam Ltd.	ASR-Q1170	ISO9001:2008	2013.6.24	Completed
Daicel Logistics Service Co., Ltd.	JCQA-0568	ISO9001:2008	2011.10.17	Completed
Dainichi Chemical Corp.	JCQA-0689	ISO9001:2008	2012.4.16	Completed
Japan Shotshell Ltd.	JQA-QMA-13973	ISO9001:2008	2012.8.20	Completed
Aboshi Plant, Daicen Membrane-Systems Ltd.	JQA-15770	ISO9001:2008	2014.2.6	Completed

≫Quality Assurance Measures at Aerospace & Defense Systems Division, Harima Plant

The Aerospace & Defense Systems Division of the Aerospace & Defense Systems/ Safety Systems Company manufactures defense-related products. In fiscal 2008, the division suffered many product defects and caused significant troubles to customers. Taking the situation seriously, the division declared a state of emergency and from fiscal 2009 launched a variety of division-wide measures aimed at preventing product defects.

Among these measures, we placed particular emphasis on the following.

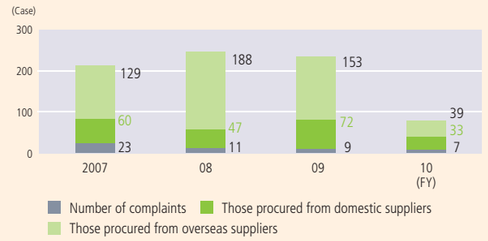
1. At the beginning of fiscal 2009, parties involved in the development and mass-production of certain products worked to identify potential risks. Departments in charge of these products formulated measures to avoid these risks and implemented these measures strategically.
2. The division held meetings with the top management of its major suppliers in Japan and overseas. Through these meetings, we confirmed the status of activities to correct past defects and encouraged suppliers to continuously improve the quality of their products.
3. Many of the products handled by the division are manufactured once a year, or even once in several years. Due to this business cycle, it is difficult to maintain the personnel and facilities required for the consistent manufacture of these products. In response, our manufacturing department gathered staff members in related departments prior to the launch of manufacturing operations. The manufacturing department provided a manufacturing demonstration to these staff members and confirmed that necessary processes, appropriate facility operations and skills were in place. Problems were preemptively identified through these activities and corrected before the launch of manufacturing operations. When necessary, we also provide operational training with educational materials. Known as "Pre-Manufacturing Checkup," this training program has been highly evaluated by our customers.

These division-wide measures have produced tangible outcomes, enabling us to reduce the number of complaints as well as the number of defective parts and components procured from both domestic and overseas suppliers. We plan to expand and strengthen these measures to attain the industry's highest level of customer satisfaction.

Ryuji Nishiuchi

General Manager, Quality Assurance, Production Control Center Aerospace & Defense Systems Division, Aerospace & Defense Systems/Safety Systems Company

Defective Parts and Components



Human Resource Development

Basic Policies for Personnel Training

Of the Daicel Group's many management resources, people are the most important. From around the globe, the Company welcomes a diversity of individuals, each contributing different backgrounds and ways of thinking, who are inspired by the Daicel Spirit. Daicel Group employees respect each other and seek collaborative work relationships, enabling the Group to maximize its collective strength. Toward becoming a company that proudly delivers the best solutions to the global market, Daicel is working to develop its employees so that they can fully exhibit their capabilities, unfettered by title or position, and adopt flexible approaches to best fulfill their responsibilities.

The Daicel Group Seeks

- Those who value communication with others, respect others and can appreciate new situations and perspectives
- Those who can sustain passion and focus to fulfill their responsibilities, seeing projects through to completion

Personnel System to Support Personnel Development

At Daicel, human resource development is underpinned by various systems and structures. By consistently adhering to the intent of these systems and consistently following these rules and structures, Daicel is promoting human resource development.

"Management by Objectives" (MBO)

MBO is a management system which enables both personnel and the organization to grow together through efforts aimed at achieving established targets. Through biannual meetings, each individual, under the direction of a superior, sets his or her goals in line with the targets of divisions and the entire Company. Individual employees then work to accomplish their goals. In terms of evaluation, we focus not only on results but also on the processes used. We use dialogues between superiors and subordinates as opportunities to allow people to develop their skills and ability.

System to Hear Employees' Thoughts (Voluntary Reporting System)

The self-evaluation system gives employees an opportunity to express their career-development wishes. Once a year, all employees express their frank thoughts and opinions regarding their current job, future posting preferences and work locations. Through dialogue, supervisors consider optimal placement and personnel training programs based on the individual's wishes and aptitude, with the aim of helping them make the most of their capabilities.

Educational and Training System to Support Personnel Development

As a means to promote human resource development, Daicel is strengthening group seminars. Various educational and training programs have been created to meet employee needs, which vary depending on rank and line of work, to maximize their effectiveness.

Introductory Training for New Employees (Training for Manufacturing)

We provide all new employees with one year of training for manufacturing operations. Through this training program conducted at the H.R. Training Center, new employees initially learn basic knowledge required of businesspeople, as well as basic knowledge about company policies and other requirements for Daicel Group members. This is followed by on-the-job training (OJT) at the Operation Training Center and production sites, where trainees are acclimated to the eight-hour-shift system. Through these activities, our new employees acquire fundamental knowledge required in manufacturing workplaces.

Group seminar at the H.R. Training Center

Educational program held at the Operation Training Center

Our Commitment to Our Technicians

For Daicel, a manufacturing-oriented company, the development of technicians is an important management issue, because they underpin the foundations of the Company's manufacturing operations. Starting with first-year training for manufacturing, technicians continue to receive education aimed at allowing them to acquire various specialized techniques, modes of action and other knowledge required when they become managers in the future.

Overseas Training Program

As Daicel expands its overseas operations, it must develop personnel who have global business capabilities. Selected employees who wish to work at overseas locations and play important roles in global operations participate in an overseas training program that extends over several months. Program participants determine their destination and goals by themselves. Through cross-cultural experience, participants are required to improve their language and communication skills. They must also eagerly engage in the study of specialized knowledge and market information. Upon return from training overseas, these individuals are called upon to apply the skills, knowledge and information they acquired in their current positions, regardless of their work locations.

On the Job training (OJT) at production sites and the Operation Training Center

Training and Educational Facility (H.R. Training Center)

Daicel's H.R. Training Center is located within the Harima Science Garden City (Kamigori-cho, Akou-gun, Hyogo Prefecture), which houses the SPring-8 large-scale photon source, the New SUBARU medium radiation facility, the Hyogo Ion Beam Medical Center and other facilities. The Company opened the H.R. Training Center in 1998 in order to provide a facility in which Daicel employees can study together, communicate and refresh themselves. Since its opening, the H.R. Training Center has been used by many Daicel employees for a number of purposes, including educational seminars, companywide projects and improvement activities.

After Completing Training for Manufacturing
(Comments by Fiscal 2010 New Employees)

Sadayuki Fukui
(received training at the Ohtake Plant)

Corporate Research Center, R&D Management Division, Daicel Chemical Industries, Ltd.

It is important to eliminate any kind of trouble to conduct safe production operations at plants. Of course, clear and present troubles must be solved. More importantly, potential problems must be spotted and the causes eliminated before they materialize. Through the training program, I learnt the particular importance of constantly implementing hazard prediction and other safety activities in corporate management.

Kaori Okabana
(received training at the Aboshi Plant)

Process Development Center, Planning and Development Office, Organic Chemical Products Company, Daicel Chemical Industries, Ltd.

At the Aboshi Plant, everybody is proactively participating in 3S activities while working to bring about frontline improvements in manufacturing on a daily basis. This includes individuals from Daicel, Group companies and partner companies. Through training, I grasped how all of these activities—from personal tidying to plant-wide cleaning—contribute to realizing improvements in the areas of safety, quality, delivery and costs. Taken together over time, these activities enable Daicel to earn greater trust and achieve higher business performance.

Comment from Overseas Training Program Participant

Atsushi Kume
(received training at the Harima Plant)

Corporate Research Center, R&D Management Division, Daicel Chemical Industries, Ltd.

Through training for manufacturing, I learnt that teamwork is indispensable to ensure product quality. I was assigned to a production site where standard procedures were documented so that everybody completes work processes safely and efficiently while maintaining satisfactory levels of product quality. These standard procedures were strictly followed. I came to understand why maintaining high product quality requires activities like these, as well as the establishment of a strong workplace culture.

Fumitaka Saito
(received training in Shanghai, China)

Legal Group, Corporate Support Center, Daicel Chemical Industries, Ltd.

Since the end of February 2011, I have been in Shanghai on Daicel's overseas training program. In the morning, I go to a college to take a Chinese language class for non-Chinese students. In the afternoon, I study Chinese laws and regulations with the help of local lawyers and Group companies. I feel privileged to have this opportunity to acquire language skills and specialized knowledge in Shanghai, an international city with sustained momentum for further growth. Through the use of this acquired skill and knowledge, I am looking forward to proactively engaging in projects in China.

CSR Initiatives Report

Optimal Workplace Creation (Personnel Systems, etc.)

Approach to Diversity

Employment of Persons with Disabilities

As a part of its social responsibility activities, Daicel worked hard to achieve a fiscal 2010 official disabled persons employment rate of 1.8%, while proactively hiring persons with disabilities to support the aspirations of these individuals to participate in social activities and to provide motivation in life. We pay utmost attention in assigning jobs according to the degree of disability, in order to help each of these individuals to accomplish their best.

Continued Employment System

With the aim of promoting the employment of people age 60 and older, Daicel introduced a system for continued employment in 2003 for retired employees and has reemployed 162 corresponding people so far.
The limit for reemployment is up to 65 years old and is made through a labor-management agreement. We will continue to offer a work environment where veteran employees can make use of their knowledge and experience.

Employment and Training of the Overseas Local Staff

In order to promote global management, Daicel applies its policy on human resources to its 37 overseas subsidiaries to employ local people without discrimination. When a new overseas office is established, we work to nurture local personnel by taking them to Japan for education and training.

Efforts to Balance Work and Private Life

Productivity Enhancement Committee

Committees set up at each workplace comprise representatives of employees and management. By continuously addressing issues, including a review of operations from the viewpoint of work-hour management and overtime reduction to enhance productivity, these committees are helping to promote a more comfortable work environment that strikes a balance between work and private life.

Leave-of-Absence and Labor System to Support Employee's Personal Life

Amid the progression of a declining birthrate and an aging population, Daicel established the following systems to develop a comfortable environment in which employees can work at ease.

- **Child-rearing leave**

Employees can take a leave to focus on child rearing until the day before their child has reached the age of one (or up to 18 months in certain cases).

- **Extended nursing care leave**

Employees can take extended nursing care leave of up to 93 calendar days when full-time nursing care is necessary for family members.

- **Nursing care leave**

Employees can take nursing care leave up to five days per year for one family member requiring nursing care or up to 10 days for two or more family members in need of nursing care.

- **Special leave due to private accident or sickness**

Employees can acquire special leave of up to 20 days per year, aside from annual paid holidays, in the event they have a non-work accident or sickness and have to be absent from work for over one week.

- **Family care leave**

Employees can shift special leave due to non-work accident or sickness to family care leave of up to 10 days per year when a family member becomes sick for over one week and needs full-time care.

- **Reduced work-hour system**

Employees can decrease work hours by up to two hours per day when they need reduced hours due to pregnancy, childbirth (within one year of delivery), child rearing (for preschool-age children) or nursing care (of family members).

Labor and Management Relationship to Support Various Initiatives

Daicel considers the labor union to be an important stakeholder and, accordingly, has established the Labor and Management Charter. With respect to the individual positions of labor and management, management carries out discussions with labor in good faith in order to best develop the Company's business. Through these efforts, we are maintaining and reinforcing a healthy relationship between labor and management.

Information Regarding Human Resources and Labor Service

1. Number of employees (As of March 31, 2011)

Full-time employees	Regular employees	Male	1,472
		Female	170
	Managers and above	Male	708
		Female	8
	Total	Male	2,180
		Female	178
	Grand total		2,358
Part-time employees	Contract employees		212
	Temporary staff		63
	Total		275

2. Average age: (As of March 31, 2011)		41.1
3. Average service years: (As of March 31, 2011)		17.6
4. Average number of dependents: (As of March 31, 2011)		1.1
5. Average annual salary: (As of March 31, 2011)		¥7.174 million
6. Paid-holiday consumption rate: (As of March 31, 2011)		66.5% (estimate)
7. Personnel turnover rate (fiscal 2010):		1.2%
8. Employment (fiscal 2010):	New graduates:	36
	Mid-career:	121
9. Disabled persons employment rate: (As of March 31, 2011)		1.91%
10. Number of reemployed persons (fiscal 2010):		42
11. Number of employees who used child-rearing/ extended nursing care leave (fiscal 2010):		
	Child-rearing leave:	6
	Extended nursing care leave:	0
12. Number of union members: (As of March 31, 2011)		1,642
13. Ratio of union members to total employees: (As of March 31, 2011)		63.9%
14. Average age of union members: (As of March 31, 2011)		38.3

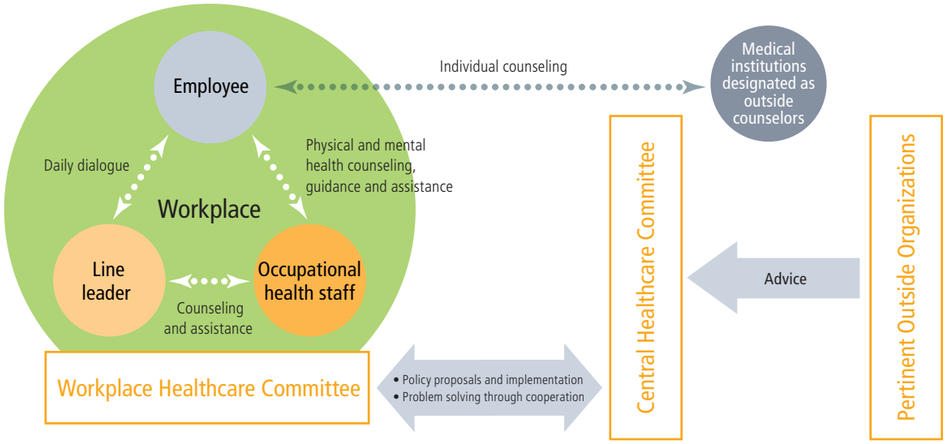
The above data is based solely on Daicel Chemical Industries, Ltd.

CSR Initiatives Report

Workplace Health Promotion (Healthcare Activities)

In 2003, Daicel established a Healthcare Committee, which represents both labor and management. This committee is working to create workplaces within Daicel where individual Daicel employees can exert their individuality and capabilities and promote health throughout the Company's workplaces.

The Healthcare Committee helps employees who have developed physical or mental disorders to return to work. More specifically, in line with its policy of providing physical and mental care, the committee formulates and implements plans for various activities aimed at identifying such employees. These activities include the offering of educational programs to prevent physical and mental disorders and the construction of necessary systems. In this way, the committee is striving to promote improved physical and mental health of Daicel employees.



Initiatives of the Healthcare Committee

- **Providing Mental Health Checkups**

Daicel offers its employees mental health checkups with the intention of enabling all Daicel employees to maintain good mental and physical health through a clearer understanding of their own mental health. These checkups have been offered since 1999. By analyzing checkup results for each workplace and obtaining feedback, an understanding of the overall healthcare situation and identification of problems in each workplace are realized, leading to continual implementation of improvement activities.

- **Providing Healthcare Education**

Daicel distributes the Stress Management Handbook to all employees with the goal of deepening awareness of the importance of mental and physical health and increasing the employee's ability to cope with stress. Using the Stress Management Handbook, we provide new employees with introductory healthcare training, other employees with position-specific healthcare training and plant staff with healthcare educational programs so that they can maintain their health and enliven their workplaces.

- **Utilizing a Psychiatrist Employed Exclusively by Daicel**

Daicel began employing its own psychiatrist in 2007 in order to bolster its follow-up care system for employees who have developed mental disorders, a situation that has been on the increase. This psychiatrist implements consultation services for employees who have developed mental disorders, provides operational assistance to the workplace return program and mental health training, while disseminating related information to employees.

- **Health Promotion Activities of Occupational Health Staff**

Daicel has employed seven occupational health doctors and nine health nurses, who are providing health services at its two head offices (Osaka and Tokyo), six plants (Aboshi, Hirohata, Harima, Ohtake, Arai and Kanzaki) and one research center (Aboshi). Through health counselor offices at these business sites, doctors and nurses provide follow-up services after regular health checkups while offering consultation, education and guidance relating to healthcare. In addition, they cooperate with Daicel's corporate health insurance society in providing specific medical checkups and health guidance. As such, they are leading Daicel's healthcare activities. Under the slogan of creating workplaces where each employee can exert individuality and capabilities, our occupational health doctors and health nurses are working together to promote health throughout Daicel.

Education provided by healthcare staff

Maintaining Communication with Local Communities

The Daicel Group remains aware of the importance of maintaining harmony with local communities. As a member of each community, the Group conducts various CSR-oriented activities.

Nurturing Children for the Future

Central Research Center and Aboshi Plant: Hands-on Chemistry Experiments for Students

To provide students with opportunities to have fun and experience the marvel of hands-on chemical experiments, Daicel has offered assistance to "Chem Chem Club" activities hosted by the Chemical Society of Japan. More specifically, the Company invited members of the club—consisting of elementary, junior-high and high school students—to its Aboshi Plant. There, we introduced Daicel's history and provided plant tours before going to the Central Research Center for hands-on experiments. One of these involved using electronic microscopes. Enlarged images of hair and ants on computer screens wowed the students. This experiment really stimulated their interest in the micro-world.

In another experiment on film production, the students observed the difference between substances that are either soluble or insoluble in water. Excitement in the lab led us to extend the session time well beyond schedule. After these activities, many of the students said, "I loved it!" Moreover, their parents and caretakers thanked us for the opportunities to enjoy chemistry. Looking into the future, Daicel will proactively work to nurture the next generation to support the development of chemistry.

Kanzaki Plant: Traffic Safety Program for Local Children

The road in front of the Kanzaki Plant is designated as a school-commuting road. In cooperation with local residents, the Kanzaki Plant has provided crossing guards near the premise from 7:30 AM to 8:30 AM every morning for more than 10 years. The plant will continue this program in order to protect the safety of local children and ensure their bright, smiley faces.

Ohtake Plant: Factory Tours for Students

The Ohtake Plant invited 40 juniors from Yamaguchi Prefectural Iwakuni Technical High School on plant tours. After explaining the overview of Daicel and the Ohtake Plant, they boarded a plant bus to observe each area of the plant. In the operation room, the students monitored actual system terminals, allowing them to witness real-time manufacturing operations. Although the plant tour was brief, we hope this experience will trigger deeper understanding of specialized technologies and stimulate their appetite for learning. We also hope that this experience will support their decisions for future schooling and careers.

Helping Community Events

Community Exchange through the Cosmos Festival

A five-hectare field with about five million cosmos flowers is maintained in front of the Harima Plant. Local residents like to gather on this field to relax and converse. Each year during bloom, the Baba Cosmos Festival is held there. 2010 marked the 15th annual event, and the festival generates more excitement every year. Harima Plant employees joined the event again this year as volunteer staff and opened a shooting gallery. Many of the local children had been looking forward to the shooting gallery, and long lines kept us busy. During this fine day on a vast cosmos field, we were able to promote meaningful exchange with local residents.

Participation in Shinkansen & Community Development Regional Forum

A forum was held at the Myoko City Hall to discuss community development in connection with the 2015 launch of Hokuriku Shinkansen (bullet train) services. Daicel participated in a panel discussion as a representative of private corporations operating in the region. The Shinkansen will connect Tokyo and Kanazawa, Ishikawa Prefecture from the spring of 2015. Just six kilometers away from Daicel's Arai Plant, Joetsu Station (tentative name) will significantly improve accessibility, not only with the Tokyo metropolitan area but also with the Kansai region. In addition to Daicel representatives, local governments and tourism organizations were represented in the panel discussion. All panelists engaged in enthusiastic discussion on the theme of how the new Shinkansen services should be used to invigorate local economies. Overall, the forum provided a very meaningful opportunity to think about the future of the Myoko region.

Chestnut Picking Event Held

The Takasaki Plant of Japan Shotshell Ltd. held a chestnut picking event. The plant invited about 40 guests including the members of local children's circles, local community association directors and parents of the children. Children rushed to gather the most chestnuts and competed to find the largest ones too. Everyone could enjoy nature's harvest and, we believe, all the guests had a splendid time under a fine, autumn sky. This event was initiated several years ago, based on opinions that we received through local discussions and meetings, and has developed into an annual highlight. Every year, we see a greater number of guests, and some of the children who attend regularly have become closely acquainted with Takasaki Plant staff. The Takasaki Plant will continue activities that emphasize the value of communication with local communities.

Contributing to Society through Volunteer Activities

PET Bottle Cap Collection

Daicel Safety Systems Inc. collects PET bottle caps and contributes these caps to a non-profit organization (NPO), Ecocap Movement. Ecocap Movement sells the PET bottle caps it collects to recycling companies. Proceeds from the sale of the PET bottle caps are used to deliver vaccines to underprivileged children throughout the world. Launched about two years ago, this program has taken solid root in Daicel Safety Systems. Involvement has spread from employees. Many families also proactively participate in this program, and, all together, a total of 36,320 PET bottle caps were collected. That number is enough to provide 50 children with polio vaccine. Daicel Safety Systems will maintain this initiative and thereby continue to contribute to society. Also, Daicel's Ohtake Plant is promoting a similar program and has collected and contributed a total of 30,040 PET bottle caps to Ecocap Movement.

- Website of NPO Ecocap Movement
  web www.ecocap007.com/aboutecocap.html

Participation in Local Cleanup Activities

Thirteen employees of Polyplastics Co., Ltd. volunteered to participate in a Mount Fuji Cleanup Project organized by Shizuoka Prefecture. This project was launched with the aim of maintaining the grandeur of Mount Fuji. The most beautiful mountain in Japan, Mount Fuji should impress people both from afar and up close. The project focuses on cleanup activities, primarily on the roads and parks below the Fifth Station. Blessed with sunshine, this year's volunteers collected PET bottle, cans and other trash. Polyplastics will continue active participation in similar activities in regions where it operates.

A Daicel Researcher Coauthors Chemistry Book Series

"We would like our books to teach younger generations how important and interesting chemistry can be. Ideally, the books will become the Souvenirs Entomologiques of chemistry."

The Chemical Society of Japan created a project team to publish books on chemistry, and Daicel researcher Mr. Masanori Yoshikane has joined this team. By cooperating with other parties active in the area of chemistry, the team has published five books over the past five years. Four of these books are compiled as a series called Chemistry: How and Where It Works. The series provides detailed explanations on fundamental chemical principles and substances that are used in goods around us. Though detailed, these books are reader-friendly enough to make discovering how chemistry works both interesting and enjoyable. In the compilation of Automobiles Revealed—the third volume of the series—the MSD R&D Center of Daicel's Harima Plant provided support and contributed illustrations showing the mechanism and functions of automobile airbags.

In *Chemistry with Emotions: Complete Edition*, the fact that chemistry is making significant contributions to global efforts aimed at realizing a sustainable society is introduced through examples of natural phenomena and product applications. This book also provides the chronology of the Japanese chemical industry.

All of these books include the periodic table of the elements in their appendices with a description of each element. The reader-friendliness of these books is supported by the extensive use of color charts, illustrations and photos. I hope that many people will come across these books and their interest in chemistry will grow.

- *Chemistry: How and Where It Works*
  - Volume One: *Chemistry Revealed in Home Appliances I — Einstein's Refrigerator*
  - Volume Two: *Chemistry Revealed in Home Appliances II — GPS: Relativism at Work*
  - Volume Three: *Automobiles Revealed—Cars Empowered by Chemistry*
  - Volume Four: *Apparel and Textile Revealed—Astonishing Evolution*
- *Chemistry with Emotions: Complete Edition—Chemistry Opening Up Doors for the Future*

* Planner/editor: The Chemical Society of Japan
Publisher: Tokyo Shoseki Co., Ltd.

Note: The books mentioned above are currently available in Japanese and Korean language editions.

Masanori Yoshikane
R&D Management Division,
Daicel Chemical Industries, Ltd.

CSR Initiatives Report

External Recognition

2010 Economy, Trade and Industry Minister's Prize for High Pressure Gas Safety

Daicel's Aboshi Plant at the Himeji Production Sector won the prize, reflecting long-time achievement of zero high-pressure-gas accidents and zero serious labor accidents. Furthermore, the plant was recognized as a model production facility promoting various measures in the area of process safety and disaster prevention. These measures include: (1) enabling a large number of workers to acquire qualifications relating to high-pressure gas handling; (2) encouraging workers to proactively participate in seminars and training courses; (3) and promoting educational and training programs through the Operation Training Center.

Chairman's Award—High Pressure Gas Safety Institute of Japan

Mr. Masaaki Kouchi (Section 1, Production Division, Hirohata Plant, Daicel Polymer Ltd.) received this award from the High Pressure Gas Safety Institute of Japan (KHK). KHK recognized his extensive experience in operating high-pressure gas manufacturing facilities and his long-accumulated achievements in ensuring safety in production operations as well as his track record in promoting exemplary safety activities.

CSJ Technical Award—Cellulose Society of Japan

Messrs. Hideaki Sakamoto, Toshio Oguni, Hiroshi Sagane and Shinichiro Imanishi received this award from the Cellulose Society of Japan (CSJ) in recognition of the development of CELBLEN.

CELBLEN is a thermoplastic compound based on cellulose, a natural ingredient boasting a variety of excellent properties. Thanks to the effective selection of cellulose raw materials and the optimized combination of matrix resins and additives, CELBLEN provides an exceptionally smooth surface while exhibiting rigidity, impact resistance, heat resistance and other characteristics on par with glass fiber-reinforced plastics. Wide-ranging applications include food containers, which require strength, stereo speaker components—which require vibration suppression and other acoustic properties—and musical instruments. Currently, we are developing new CELBLEN applications in, for example, industrial and automotive parts and components.

Best Quality Award—Toyoda Gosei (Thailand) Co., Ltd.

Daicel Safety Systems (Thailand) Co., Ltd. received the 2009 Best Quality Award from Toyoda Gosei (Thailand) Co., Ltd. (TGT). TGT is one of the principal overseas plants of Toyoda Gosei Co., Ltd., a major customer of Daicel's airbag inflators. TGT quantitatively evaluates all the raw material suppliers using its own standards in terms of quality, service, costs and improvements, and grants this award to the supplier achieving the highest evaluation.

Harima Plant Chosen as a Safe Facility Handling Hazardous Materials

Daicel's Harima Plant was chosen as one of the safest facilities handling hazardous materials and accordingly received a prize from the Commissioner of the Fire and Disaster Management Agency at the 2010 Hazardous Materials Safety Conference. The agency recognized the Harima Plant's promotion of secure management of hazardous materials, cooperation with government policies regarding the safety of these materials and significant contributions to the maintenance of public safety.

Kanzaki Plant Received Prize for Promotion of Community Activities

Our Kanzaki Plant received a prize from Amagasaki City in recognition of its significant contributions to realizing comfortable living environments through various community activities it has long promoted. These activities include beautification around the plant and safeguarding local children on designated school-commuting roads.

Daicel's Celluloid-Related Historical Materials Recognized as *"Chemical Heritage"*

In March 2011, the Chemical Society of Japan certified Daicel-owned buildings and related materials indicating the birthplace of the Japanese celluloid industry as a *Chemical Heritage*, in the view that these are invaluable historical materials on chemistry and chemical technologies. The following describes the examples of Daicel's *Chemical Heritage*.

• The First Boiler at the Aboshi Plant

This coal-fired boiler was constructed in 1909 at the Aboshi Plant at the Himeji Production Sector, which was then Japan Celluloid Artificial Co., Ltd., a predecessor of Daicel.

• Celluloid Trial Production Equipment

This pressurization equipment was used in the process of making patterns particular for celluloid. This equipment is one origin of Daicel's *Monozukuri (Creation of New Value)*.

• Machining Tools and Celluloid Products

These tools and products are exhibited in the Daicel Ijinkan. The black kewpie doll is a rare item, being one of only several existing in Japan.

• Daicel Ijinkan

This building was constructed in 1909 as the Western-style residence for foreign engineers that Japan Celluloid Artificial invited upon the launch of plant operations.

Opinions of Third Parties

ダイセル化学グループ　CSR報告書2011
第三者検証　意見書

レスポンシブル・ケア

2011年5月30日

ダイセル化学工業株式会社
代表取締役社長　札場操 殿

日本レスポンシブル・ケア協議会
レスポンシブル・ケア検証センター長
中田　三郎

■検証の目的

本検証は、株式会社 ダイセルが作成した「ダイセル化学グループ CSR 報告書2011」(以後、報告書と略す)を対象として、下記の事項について、化学業界の専門家としての意見を表明することを目的としています。

1) パフォーマンス指標(数値)の算出・集計方法の合理性及び数値の正確性
2) 数値以外の記載情報の正確性
3) レスポンシブル・ケア活動及び CSR 活動
4) 報告書の特徴

■検証の手順

・本社において、各サイト(事業所、工場)から報告される数値の集計方法の合理性、及び数値以外の記載情報の正確性について調査を行いました。 調査は、報告書の内容について各業務責任者及び報告書作成責任者に質問すること、およびそれぞれの責任者より資料提示と説明を受けることにより行ないました。
・サイトにおいて、本社に報告する数値の算出方法の合理性、数値の正確性及び数値以外の記載情報の正確性の調査を行いました。サイトの調査は、各業務責任者及び報告書作成責任者への質問とその資料提示及び説明を受けること、並びに証拠物件との照合することにより行ないました。
・数値及び記載情報の調査についてはサンプリング手法を適用しました。

■意見

1) パフォーマンス指標(数値)の算出・集計方法の合理性及び数値の正確性について
・数値の算出・集計方法は、本社および新井工場において合理的な方法を採用しています。
・調査した範囲では数値は正確に算出・集計されています。
2) 記載情報の正確性について
・報告書に記載された情報は、正確であることを確認しました。原案段階では表現の適切性、文章のわかりやすさについて若干の指摘をしましたが、現報告書では指摘事項は修正されています。
3) レスポンシブル・ケア活動及び CSR 活動について
・企業倫理実践にマネジメントシステムを適用し、きちんと PDCA サイクルを廻されている点を評価いたします。
・労働災害の分類にヒューマンファクターを加える等、労働速報 DB はよく工夫されています。
・新井工場は設備的に古い工場ですが、3S 状況及び従業員の行動様式が良好な点を評価いたします。
4) 報告書の特徴について
・今年度、トップインタビュー、研究・開発をトピックスとして取り上げ、報告書にメリハリをつける工夫をされている点を評価いたします。
・前年度に比べイラストを多用する等、「読みやすく、分かりかりすく」の視点から工夫をされている点を評価いたします。一方、多くのステークホルダーを対象とされている為、一般市民にとっては専門用語が多く難しい内容と感じました。今後、報告書がターゲットとするステークホルダーを明確にし、それにふさわしい編集をされることを期待いたします。

以上