Priority Issue 3

Address Energy Issues toward a Non-Carbon Society

Target for 2030

Contribute to the creation and widespread use of renewable energies through highly functional materials.

To build the carbon neutral society envisioned under the Paris Agreement, the Fujifilm Group will develop and make available energy-related technologies that use highly functional materials from three aspects: energy creation, energy storage and energy conservation. We continue contributing to renewable energy creation and dissemination through accelerating the introduction and widespread use of renewable energies in society by our technologies.

Outline of Activities in FY2018

- Participated in an industry, government, and academia project hosted by the New Energy and Industrial Technology Development Organization (NEDO) to develop the all-solid-state lithium-ion batteries, the next-generation storage batteries for electric vehicles, as one of 23 companies, including automobile and battery manufacturers.

Future Activities and Targets

- We will continue participating in the NEDO activities and R&D collaborating with other companies.

Priority Issue 4

Ensure Product and Chemical Safety

Target for 2030

Minimize adverse effects on human health and the environment through the manufacture and use of chemicals.

Because the Fujifilm Group manufactures a wide range of products including chemical products, highly functional materials, optical devices, office equipment, and medical equipment, we have established management rules for each manufacturing process of our products from two perspectives: management of the handling of chemical substances and management of information on chemical substances in our products. We have implemented global operations management across the Group and we have established a system to acquire accurate information on the laws and regulations in each country and region around the world to start a prompt preparation in an early stage. This has allowed us to maintain comprehensive and efficient management of chemical substances.

Outline of Activities in FY2018

- Completed the review of chemical substances used globally in products according to our voluntary management policy for specific chemical substances preceding regulation in each country. Created and enforced management plans for alternatives and reduction of chemical usage and emissions.
- An alternative test method for skin sensitization test, ADRA has been adopted in OECD test guidelines 442C*. For in vitro skin corrosion tests using 3-dimensional reconstructed human epidermis model, LabCyte EPI-MODEL 24 was also adopted into OECD test guidelines 431.
- Started full-scale operation of a chemical information communication system, chemSHERPA in China.
- Started development of a safety prediction method that takes account of animal welfare.
- Started education program for reagent users concerning chemical substance handling.

* OECD test guidelines: Guidelines specified by the Organization for Economic Co-operation and Development (OECD) to standardize testing methods to assess the characteristics and safety of chemical substances.

LabCyte EPI-MODEL 24

▶ **Related Data and Information:**
Management Performance Page 61 *Management of Chemical Substance*

Future Activities and Targets

- Further reduce usage and emissions of hazardous substances and replace them with safer alternatives based on the chemical substance management plan.
- Complete transfer to the new version of chemSHERPA within FY2019 and utilize IT tools such as RPA to make the legal compliance system more robust.
- Further expansion of chemical handling education program to reagent product users and improvement of internal education.
- Develop a highly accurate safety prediction method.
- Build a next-generation chemical substance management system.
- Utilize alternative methods to animal testing for internal safety evaluations.

Management of Chemical Substances

The Fujifilm Group classifies specially managed chemical substances into five categories based on hazards and toxicities, legal and regulatory requirements, and management policies, keeping them under stricter control than even the legal requirements. For example, if a certain chemical substance is found to be significantly hazardous, we immediately start considering replacing that chemical. Also, if a regulation newly specifies a list of chemicals to be placed under stricter control, we immediately start planning to replace them, even though they are legally permitted to be used. For this reason, we have already started to develop a safety prediction method using computer simulations. The Fujifilm Group adopts the same approach concerning controls for all the chemical substances that we use across the world.

Education on Safe Management of Reagents

Since FY2000, FUJIFILM Wako Pure Chemical Corporation has held more than 400 training sessions on Safe Management of Reagents for our customers in corporations, universities, hospitals, and public research institutes. Our sessions are highly appreciated for their easy-to-understand contents directly connected to actual work with abundant examples. Some of the customers request us to provide such sessions annually. To respond to demands from a greater number of customers, we plan to increase the number of lecturers. We continue to contribute to minimizing chemical risks by providing the same training to Fujifilm Group employees.

Replacing Animal Testing in Safety Assessments

Fujifilm has been working to establish new methods of management and safety assessments concerning chemical substances—which can affect the global environment and human health—across the entire production procedure, from the early development stage to commercialization.

In June 2019, an alternative test for skin sensitization, Amino Acid Derivative Reactivity Assay (ADRA), developed by Fujifilm, was adopted in the Organization for Economic Co-operation and Development (OECD) test guidelines 442C. ADRA can evaluate a wider variety of chemical substances by making use of a reagent with high detection sensitivity developed with Fujifilm's chemical synthesis and molecular design technology. Fujifilm developed the ADRA Kit in September 2018 utilizing FUJIFILM Wako Pure Chemical's technology. We distribute this ADRA Kit inside and outside Japan, aiming at a wider adoption of this method. We also held a technology seminar at the premises of FUJIFILM Wako Pure Chemical in June 2019 with the aim of smoothly introducing and spreading use of ADRA. The seminar was well attended by different types of businesses.

Also, Japan Tissue Engineering Co., Ltd., one of our group companies, offers the LabCyte series, a cultured human epidermis for research purposes. The company has developed Autologous Cultured Epidermis as Japan's first regenerative medicine, and its cell culturing technologies and expertise gained from development of this medicine were utilized to create the LabCyte series. The skin irritation testing method using LabCyte EPI-MODEL 24, a 3-dimensional reconstructed human epidermal model, and an eye irritation test using the LabCyte CORNEA-MODEL 24, a reconstructed human corneal epithelial tissue, are now both adopted in the OECD test guidelines to be used as an alternative method to animal testing. In June 2019, the testing method using the EPI-MODEL 24 has additionally been certified to satisfy the requirements of the in vitro skin corrosion testing method stipulated by the OECD TG431 guidelines.

The Fujifilm Group continues to proactively develop and widen new chemical safety assessment methods that can replace existing animal testing.

TOPICS

Priority Issue 4

Chemical Substance Management Working Together with Suppliers

Full-scale operation of chemical information communication system chemSHERPA starts in China

Fujifilm has established the Fujifilm Green Procurement Standards that specify permitted chemical substances used in the raw materials, parts, and components of our products. The standards are used for sound management of chemical substances contained in products in cooperation with suppliers. In addition, we have introduced chemSHERPA, a new system to communicate information on chemical substances in products among companies in the supply chain. We provide explanatory meetings on chemSHERPA every year and we held 20 meetings in FY2018. In June 2018, we held a explanatory meeting in FUJIFILM Imaging Systems (Suzhou) Co., Ltd. to local part manufacturers. The meeting explained how chemSHERPA works and related IT tools to share chemical information efficiently, as well as mandating the suppliers to provide such information. We plan to complete the transfer to the new version of chemSHERPA within FY2019 and then expand this to other areas of the Asian region.

A meeting at FUJIFILM Imaging Systems (Suzhou) Co., Ltd.