

## Chemical Safety Initiative

### Fiscal 2016 Targets

- Maintain the level of PRTR<sup>1</sup> substance emissions to not more than 40% (medium-term target) of levels recorded in fiscal 2001.

### Fiscal 2016 Results

- Achieved targeted levels of PRTR substance emissions.

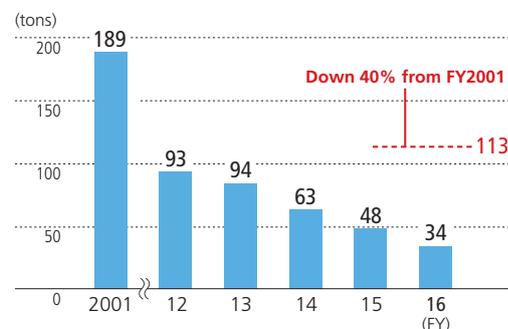
### Fiscal 2017 Targets

- Maintain the level of PRTR substance emissions to not more than 40% (medium-term target) of levels recorded in fiscal 2001.

### Reducing of PRTR Substance Emissions

In fiscal 2016, PRTR substance emissions decreased approximately 14 tons compared with the previous fiscal year thanks to the use of improved methods for collecting toluene and the effective recapture of exhaust gas for use as fuel. Daicel thus achieved its medium-term target of maintaining the level of PRTR substance emissions to not more than 40% of levels recorded in fiscal 2001. Looking ahead, we will continue to reduce PRTR substance emissions.

### Reducing PRTR Substance Emissions



### Emission and Transfer of PRTR Substances for Daicel Corporation\*<sup>1</sup> (FY2016)

Ordinance-designated number	Substance	Total emissions	Emissions				Transferred	
			Emissions into atmosphere	Emissions into water	Emissions into land	Business site landfill disposal	Sewage	Off-side
9	Acrylonitrile	0.2	0.2	0.0	0.0	0.0	0.0	0.0
10	Acrolein	0.6	0.1	0.5	0.0	0.0	0.0	0.0
12	Acetaldehyde	2.0	0.7	1.3	0.0	0.0	0.0	0.0
28	Allyl alcohol	1.0	0.0	1.0	0.0	0.0	0.0	0.0
56	Ethylene oxide	0.4	0.3	0.1	0.0	0.0	0.0	0.0
58	Ethylene glycol monomethyl ether	0.2	0.0	0.2	0.0	0.0	0.0	0.0
68	1, 2-Epoxypropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135	2-methoxyethyl acetate	0.1	0.0	0.1	0.0	0.0	0.0	0.0
186	Dichloromethane	0.5	0.5	0.0	0.0	0.0	0.0	4.5
240	Styrene	5.0	5.0	0.0	0.0	0.0	0.0	0.0
243	Dioxins* <sup>2</sup>	80.8	76.8	4.0	0.0	0.0	0.0	1.1
277	Triethylamine	0.9	0.6	0.3	0.0	0.0	0.0	0.1
300	Toluene	12.2	12.2	0.0	0.0	0.0	0.0	28.7
308	Nickel	0.2	0.0	0.2	0.0	0.0	0.0	2.3
351	1, 3-butadiene	0.1	0.1	0.0	0.0	0.0	0.0	0.0
375	2-butenal	0.6	0.0	0.6	0.0	0.0	0.0	0.0
384	1-bromopropane	1.2	1.2	0.0	0.0	0.0	0.0	0.0
392	n-Hexane	4.3	3.8	0.5	0.0	0.0	0.0	20.9
400	Benzene	0.1	0.1	0.0	0.0	0.0	0.0	0.3
405	Boron compounds	3.7	0.0	3.7	0.0	0.0	0.0	0.0
423	Monomethylamine	0.6	0.0	0.6	0.0	0.0	0.0	0.0
	Others* <sup>3</sup>	0.2	0.1	0.1	0.0	0.0	0.0	2.0

### Emission and Transfer of PRTR Substances by Other Group Companies\*<sup>1</sup> (FY2016)

Ordinance-designated number	Substance	Total emissions	Emissions				Transferred	
			Emissions into atmosphere	Emissions into water	Emissions into land	Business site landfill disposal	Sewage	Off-side
13	Acetonitrile	0.0	0.0	0.0	0.0	0.0	0.0	1.4
80	Xylene	0.0	0.0	0.0	0.0	0.0	0.0	0.0
151	1, 3-Dioxolane	5.6	5.6	0.0	0.0	0.0	0.0	0.0
277	Triethylamine	0.6	0.6	0.0	0.0	0.0	0.0	2.6
296	1, 2, 4-Trimethylbenzene	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300	Toluene	0.0	0.0	0.0	0.0	0.0	0.0	3.1
400	Benzene	0.0	0.0	0.0	0.0	0.0	0.0	0.0
405	Boron compounds	0.1	0.0	0.1	0.0	0.0	0.0	0.0
411	Formaldehyde	2.8	2.8	0.0	0.0	0.0	0.0	0.0
420	Methyl methacrylate	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Others* <sup>3</sup>	0.0	0.0	0.0	0.0	0.0	0.0	7.5

\*1 The threshold for amounts handled was 1 ton/year/workplace.

\*2 Unit for emissions and transfer of Dioxins is mg-TEQ/year.

\*3 Substances with emissions below 0.01 ton per year are consolidated under Others.

**Fiscal 2016 Targets**

- Achieve VOC emissions of not more than 40% (medium-term target) of levels recorded in fiscal 2000.

**Fiscal 2016 Results**

- Did not achieve targets for VOC emissions.

**Fiscal 2017 Targets**

- Achieve VOC emissions of not more than 40% (medium-term target) of levels recorded in fiscal 2000.

**Reducing of VOC<sup>2)</sup> Emissions**

In fiscal 2016, the volume of VOC emissions increased year on year in step with an increase in emissions of acetone due to a rise in production volume of acetate tow for cigarette filters at the Aboshi and Ohtake plants. Reflecting this, the Company's target for VOC emissions went unmet. In fiscal 2017, we will strive to reduce VOC emissions by, for example, improving the acetone absorption capacities of activated carbon used to treat exhaust gas and reviewing conditions for yarn production process.

**Other Activities in Chemical Safety****Appropriate Control of PCBs**

In compliance with the Waste Management and Public Cleansing Act and the Act on Special Measures Concerning Promotion of Proper Treatment of PCB Wastes, the Daicel Group conforms to appropriate practices for the storage and management of transformers, capacitors and other machinery containing polychlorinated biphenyls (PCBs), and is systematically disposing of the waste.

In fiscal 2016, the Company disposed of high-concentration PCB waste from stabilizers and capacitors, which had previously been stored at the Ohtake and Arai plants, respectively, at pollution-free treatment facilities certified by the national government. The Company also disposed of low-concentration PCB waste from transformers that had been stored at the Aboshi Plant at such facilities. Going forward, Daicel will continue to execute the planned disposal of PCB-contaminated waste.

**Initiatives to Maintain Compliance with International Chemical Regulations**

In addition to complying with domestic regulations with regard to the management of chemical products, Daicel maintains compliance with chemical regulations enforced in Europe, the United States and other countries abroad by maintaining collaboration with external expert organizations and seeking advice from and cooperation of such organizations.

The Company completed the phase 1 and phase 2 registrations of its products designated under the European Union's REACH<sup>3)</sup> regulations in November 2010 and May 2013, respectively. Currently, efforts are under way to complete the phase 3 registration of all remaining chemical subject to these regulations by May 2018.

In addition, employees in charge of chemical management at both internal companies and Group companies regularly meet to exchange information, while individuals charged with supervising the Environment and Safety divisions of each business site hold periodic meetings for environment and safety managers. In these ways, the Group is ensuring that relevant employees are well versed in the law, regulatory updates and trends with regard to chemical.

Furthermore, the Group conducts periodic surveys on revisions in domestic and international chemical regulations while sharing the results of these surveys with internal companies and other business sites.

**Provision of Chemical Information**

Since Daicel aims to ensure that customers can always use its products with confidence, the Company maintains compliance with GHS<sup>4)</sup> and such regulations as the Industrial Safety and Health Law, preparing mandatory SDS<sup>5)</sup> and labeling for every product in the Company's lineup and making these sheets available to customers. In addition, Daicel discloses SDS for its mainstay products via its website.

**Consolidated Management of Chemical Information**

Through Daicel's unique chemical information management data bank called D-CLik, the Company unified information on raw materials, intermediates and finished products with regard to their physical, chemical, and hazardous properties and relevant regulations. The data bank helps the Company perform risk assessment for each product, prepare SDS and labels and promptly furnish relevant information to customers.

**Reducing Volatile Organic Compound (VOC) Emissions****What is...?**

- PRTR:** PRTR stands for Pollutant Release and Transfer Register. This is a system where business operators calculate the amount of chemical compounds emitted into the environment or transferred off-site for treatment or disposal during production, usage or storage in Japan and notify the government of these figures.
- VOC:** VOC stands for Volatile Organic Compounds. Some of the most well known examples include toluene, xylene and ethyl acetate.
- REACH:** The Registration, Evaluation Authorization and Restriction of Chemicals (REACH) regulations mandate that producers must register their chemical products with the European Union (EU) and conduct safety assessments, restrict their use, and control permits for their use.
- GHS:** Globally Harmonized System of Classification and Labelling of Chemicals that provides rules regarding the presentation of hazard information of chemical substances and precautions for their handling based on globally harmonized classification and labeling methods.
- SDS:** Safety Data Sheet, a document providing information on the properties of chemical substances and instructions about their handling.