

## VIGOROUS PROMOTION OF ENVIRONMENTAL MANAGEMENT

In August 1998 the Shin-Etsu Group adopted its Environmental Charter, which serves as a guideline for realizing a society capable of sustainable development as the Group vigorously carries out its worldwide business activities. As part of its Environmental Charter, the Shin-Etsu Group has formulated the basic philosophy: "Shin-Etsu Chemical Co., Ltd. recognizes that protection of the global environment is one of the highest priorities for humanity. Our goal is to contribute to the creation of a society capable of sustainable development by being fundamentally committed to considering the environment in all aspects of our

business activities." This basic philosophy contains five action guidelines.

In 1996 our Gunma Complex acquired ISO14001 certification, the international standard for environment management. This was the first such achievement for a leading chemicals company in Japan. As of March 2001, each of Shin-Etsu's production bases as well as its principal subsidiaries and affiliates, including Shin-Etsu Handotai, had received ISO14001 certification. In undertaking their operations, each production base is also defining its own environmental policies based on

the Environmental Charter. The manufacture of products inevitably results in the creation of by-products, wastewater, or gases. Shin-Etsu works to recycle these to the greatest degree possible. Non-recyclable waste materials are treated at landfill sites after reduction and detoxification. Also, to respond to various environmental problems ranging from regional issues to global ones, each production base has established themes for reducing greenhouse gases, conserving energy, cutting waste materials, and properly controlling and managing chemical substances, as part of continual improvement efforts to reduce the burden on the environment.

### ISO14001 Certification of the Shin-Etsu Group

Company	Plant	Certification Date	
Shin-Etsu Chemical	Isobe	7/1/1996	
	Matsuida	7/1/1996	
	Gobara	7/1/1996	
	Silicones-Electronics Materials Research Center	7/1/1996	
	Advanced Functional Materials Research Center	7/1/1996	
	Takefu	12/25/1998	
	Naoetsu	5/31/1999	
	Kashima	3/21/2000	
	Shin-Etsu Handotai Group	Shirakawa	1/21/1997
		Takefu	7/24/1997
Isobe		11/10/1997	
Saigata		12/16/1997	
Mimasu Semiconductor		1/19/1998	
Nagano Electronics Industrial		2/20/1998	
Naoetsu Electronics Industrial		7/28/1998	
S.E.H. Malaysia		5/7/1998	
S.E.H. America		9/25/1998	
S.O.E. (Taiwan)		11/18/1998	
S.E.H. Europe		1/26/1999	
S.E.H. Taiwan		8/24/1999	
S.E.H. Shah Alam		9/20/1999	
Shin-Etsu Engineering		Kashima	3/21/2000
Nissin Chemical Industry			4/24/2000
Shin-Etsu Quartz Products	Takefu	1/5/2000	
	Koriyama	6/14/2000	
Naoetsu Precision		10/23/2000	
Shin-Etsu Vinyl Acetate		3/26/2001	

### Contribution to the Prevention of Global Warming

While working to conserve energy at each production base, Shin-Etsu makes efforts to reduce the discharge of such greenhouse gases as carbon dioxide, methane, and fluorocarbons, which cause global warming. Particularly noteworthy, Shin-Etsu abolished the use of chlorofluorocarbon gas in 1995. The Company is also vigorously promoting the introduction of cogeneration systems and uses such systems at its Gunma Complex and Naoetsu plant. These systems enable us to more effectively use energy, reduce the consumption of fossil fuels, and cut emissions of such greenhouse gases as carbon dioxide.

### Strengthening Our Line of Ecoproducts and Promoting Their Greater Use

Because it is the world's largest manufacturer of polyvinyl chloride, there are instances when Shin-Etsu has the image of being a manufacturer in the petrochemicals industry. In reality, however, the main raw material in products such as silicones (silicone resin) and synthetic quartz, which is used to make optical fibers, is silicon, a material that is abundantly present in the natural environment. In addition, the composition ratios of salt and petroleum in chlorinated vinyl are 57% and 43%, respectively, indicating that the petroleum content is remarkably low compared with other plastic products. Among the diverse range of products that

we supply to the market are numerous products that help reduce the burden on the environment. For example, polyvinyl chloride is used in the construction and civil engineering fields because of its superb anticorrosion and weather-resistance properties. Among such products, vinyl sash has attracted attention because of its insulating capabilities. Its heat retaining capabilities are significantly greater than those of aluminum. When used as a window frame, vinyl sash enables a reduction in energy consumed in heating and cooling processes by half compared with previous products.

We sell a synthetic pheromone, a revolutionary product that replaces conventional method of killing pests using insecticides. This product is being used increasingly at apple, peach, pear, and plum orchards. Because synthetic pheromone chemicals are made of synthetic natural substances, their toxicity is minimal compared with conventional insecticides and agricultural chemicals. Moreover, the synthetic pheromone does not cause environmental pollution since its decomposition produces only carbon dioxide and water.

Rare earth magnets are used in the motors of compressors for air conditioners and are effective in reducing electric power consumption. Silicones reduce the environmental burden by modifying the composition of plastics. This use of silicones to modify rubber in tires contributes to reductions in SO<sub>x</sub> and NO<sub>x</sub> by improving fuel efficiency.



Synthetic pheromone is used in orchards to confuse mating signals among pests.

### Environmental Action Plan

The Shin-Etsu Group has formulated its Environmental Action Plan to continue vigorously undertaking Groupwide environmental activities.

### Promotion of Energy Saving

Through the implementation of the following changes and improvement measures, Shin-Etsu aims to raise the efficiency of use of electric and steam.

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| <ul style="list-style-type: none"> <li>• Reducing electric power consumption by adopting a highly effective refrigerator.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Promoting the heating of raw materials through reaction products.</li> </ul>                |
| <ul style="list-style-type: none"> <li>• Increasing the efficiency of heating and cooling method processes.</li> </ul>               |
| <ul style="list-style-type: none"> <li>• Continuously promoting the introduction of cogeneration systems</li> </ul>                  |

### Aiming for Zero Emissions (Reduction of Waste)

Shin-Etsu has reconfirmed that much of the waste from production activities consists of by-products generated through chemical reactions, sub-materials such as solvents, and non-response main materials. Regarding types of waste, there is much organic or inorganic sludge, waste oil, and waste acid. We plan to achieve zero emissions by promoting reductions in the volume of raw materials used and through recycling and reuse of waste.

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| <ul style="list-style-type: none"> <li>• Reusing inorganic sludge waste as cement materials.</li> </ul>          |
| <ul style="list-style-type: none"> <li>• Recovering valuable metals for recycling into raw materials.</li> </ul> |

### Promotion of Measures for Prevention of Environmental Pollution

We promote measures to prevent environment pollution, focusing on the following issues to enhance preservation of the water and air, as well as environmental preservation on a global basis.

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| <ul style="list-style-type: none"> <li>• Enforcing measures for the treatment of wastewater</li> </ul>                         |
| <ul style="list-style-type: none"> <li>• Reducing greenhouse gas emissions</li> </ul>                                          |
| <ul style="list-style-type: none"> <li>• Achieving energy savings</li> </ul>                                                   |
| <ul style="list-style-type: none"> <li>• Properly controlling chemical substances</li> </ul>                                   |
| <ul style="list-style-type: none"> <li>• Reducing waste and promoting recycling</li> </ul>                                     |
| <ul style="list-style-type: none"> <li>• Noise-reduction measures</li> </ul>                                                   |
| <ul style="list-style-type: none"> <li>• Reducing the burden on the environment through R&amp;D of new technologies</li> </ul> |
| <ul style="list-style-type: none"> <li>• Setting handling standards for chemical substances</li> </ul>                         |



Shin-Etsu Environmental Report 2001

For more-detailed information on our environmental activities, please access our Web site at <http://www.shinetsu.co.jp/e/profile/kankyo.shtml>