PREFACE

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Material Development Versus Environment

A feature of the consumer society in a country might be the idea that waste or non-utilitarian expenditure was good and an indicator of how far the country had advanced. As the result, we cannot help noticing the waste created by excessive packaging and the roadsides piled with no-longer-wanted or unfashionable appliances.

In December 1997, representatives from throughout the world gathered in Kyoto to work towards reducing global greenhouse gas emissions. While the meeting helped put us on the stage of international environmental diplomacy, it may disguise the fact that we are still struggling with local problems such as waste and pollution. Global environmental problems have become a major international concern since the late twentieth century, often overshadowing serious problems that we have yet to solve within our own country. Unless these problems are dealt with, no country can be considered to be a truly-advanced nation capable of showing leadership in the world.

Let us show an example of pollution problems to be tackled in Japan. A newspaper says that dioxin (polychlorinated dibenzo-p-dioxins) contamination in Japan is the worst in the world. The toxicity of dioxins became evident in the large number of children with birth defects whose mothers had contact with defoliants used in large quantity by the United States military during the Vietnam War. Later a Japanese research team examined ashes from waste incinerators and reported detection of dioxins.

The following explanation is made for the abnormally high levels of dioxins in Japan. One major characteristic of waste disposal in Japan is the high reliance on the incineration of waste, irrespective of whether its origins are domestic or industrial. This enables us to reduce the volume of waste to about 5 per cent of its original volume, and it is considered an effective way to eliminate bacteria and odors. A major problem with this is the high proportion of plastics such as polyvinyl chloride, much of which includes chlorides that create dioxins on being burnt.

Material engineers as well as many other engineers have believed that they had succeeded in introducing industrial technologies which minimized size and maximized performance, and then had overcome any pollution problems. They should never finish it as considering this self-confidence as only a myth. It is now expected for the material engineers to play an important role of leading environment-friendly technologies, while meeting public demand for not only global but also local environment.

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