What are we doing to reduce chemical substances?

Certain chemicals, even at low levels and legally permitted concentrations, adversely affect the human body and the overall ecological system. Therefore, it is imperative to establish a system that addresses emissions of these substances. CFCs had been used as coolants and heat insulators all over the world. Scientists later determined that CFCs destroy the ozone layer of the earth's atmosphere that protects us from harmful UV radiation. As CFCs are now restricted by international regulations, JR East continues to minimize use of these substances and to employ safer substitutes whenever possible.

Reducing chemical substances

Reducing substances that deplete the ozone layer

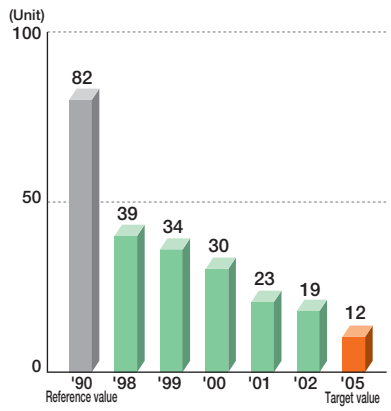
The air-conditioning systems of large buildings and railcars use specific chlorofluorocarbons (CFCs) that destroy the ozone layer. JR East is replacing its old building systems with new ones that are free of specific CFCs.

At the end of FY 2002, we had only 19 specific CFC-based air-conditioning systems, which use 9 tons of CFCs. We simultaneously began introducing non-CFC water-cooling and heating appliances, and had installed 26 units by the end of FY 2002.

On our trains, some diesel cars and passenger cars are equipped with specific CFC-based, and others with CFC-substitute air-conditioning systems. By the end of FY 2002, we had used two tons of specific CFCs and 96 tons of alternative CFCs. We periodically check for gas leaks, and we recover CFCs when scrapping railcars as mandated by law. In the latest models, such as the E231 series, we use R407C, which does not harm the ozone layer.

At the end of FY 2002, 72 tons of halon gas in containers were being used as a fire-extinguishing agent for buildings and other facilities. Although we recover and reuse this halon gas when dismantling halon-using equipment, we will introduce CO_2 as well as powders and other fire-extinguishing agents .

Number of large-size, specific CFC-based refrigeration machines



Reducing chemical substances used by rolling stock maintenance facilities

JR East uses certain chemicals primarily when painting and repairing rolling stock. We use these strictly regulated substances with care in order to prevent leaks and other hazards. Since FY 2001, the 12 service divisions that handle more than the designated amount of regulated chemicals have reported emission volumes and transfers to the appropriate prefectural authorities in compliance with the Regulations on Pollutant Release and Transfer Register, also called PRTR regulations.

As of the end of FY 2002, 54% of our total conventional railcars (10,632) were stainless steel, which requires no paint.

Organic solvents are used in painting bridges and other railway facilities; JR East used 230 tons of such solvents in FY 2002.

Municipal gas, kerosene and low-sulfur heavy oil are used at Kawasaki Thermoelectric Power Plant . These fuels generate exhaust gases including NOx, SOx and particulates, and therefore we use NOx removal equipment and dust separators to reduce these emissions. The NOx emission level in FY 2002 was 399 tons, meeting our FY 2005 target and reducing emissions to 60% of 1990 levels. We will monitor these emissions in the future to ensure that they do not exceed these target levels.

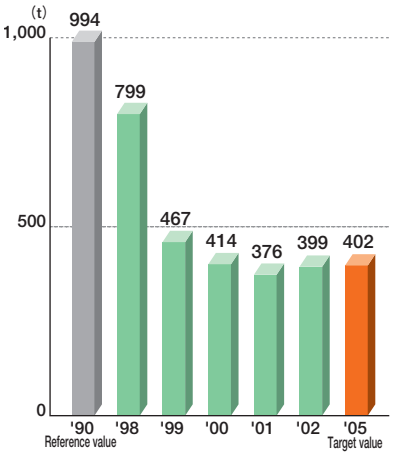
Notified volume released and transferred in 12 places

Name of chemicals	Level of emissions into the air	Level of discharge into public water bodies	Amount transferred to sewers	Amount transferred to outside facilities
Bisphenol A type epoxy resin (kg)	0	0	0	1,400
Ethylene glycol (kg)	0	6,800	0	2,200
Xylene (kg)	27,580	0	0	3,569
Chromium and Chromium (III) Compounds (kg)	0	0	0	130
Dioxins (mg-TEQ)	316	0	1	1,937
Toluene (kg)	42,501	0	9	27,238
Dichloromethane (kg)	4,200	0	0	1,300
Styrene (kg)	6,426	0	0	2,142

Note: There is no discharge to soil and landfill disposal.

Reducing NOx emissions from thermoelectric power plant

NOx emissions from dedicated thermal plant



Storage of polychlorinated biphenyls (PCBs)

JR East is actively replacing PCB-containing transformers, condensers, fluorescent stabilizers and other equipment in railcars and at transformer stations. We have removed from use and are storing approximately 2,000 tons of PCBs, notifying local government agencies as required. We will conduct the detoxification process on all PCB-containing equipment as quickly as possible.