

# Preserving Environmental Quality at JFE Steel

JFE Holdings				
JFE Steel	JFE Engineering	Kawasaki Microelectronics	JFE Urban Development	JFE R&D

## Air Quality Preservation

### ● Reducing sulfur oxide (SOx) emissions

To reduce emissions of sulfur oxide (SOx), JFE has adopted low-S fuels and introduced the high-efficiency flue gas desulfurization system. In 1976, the company installed a high-efficiency sintering flue gas desulfurization plant using the ammonium-sulfate process,\*1 which was unprecedented in the world, at East Japan Works (Keihin), achieving a broad reduction in SOx. In FY2002, two new de-S plants were constructed at West Japan Works (Fukuyama). As a result, a 100% contribution was re-

alized, reducing SOx emissions in FY2003 by approximately 2% from the FY2002 level, to 3.9 (10<sup>6</sup>Nm<sup>3</sup>). This was equivalent to 11% of emissions in FY1973, and was 1/9 the former level.

### ● Reducing nitrogen oxide (NOx) emissions

JFE Steel has actively installed flue gas denitration systems to reduce NOx emissions. Sintering flue gas de-N systems, which decompose NOx into nitrogen and water, were installed at East Japan Works (Chiba) in 1976 and East Japan Works (Keihin) in 1979, greatly reducing NOx emissions.

In FY2003, NOx emissions were maintained at the FY2002 level, at 14.8 (10<sup>6</sup>Nm<sup>3</sup>). This was

43% of the level in FY1973, or a reduction of more than half.

### ● Reducing dust

Dust is mainly generated in yards and conveyors for raw materials. Sprinkling in ore and coal yards, sealed conveyor connections, and other measures prevent dust generation. At coke ovens, sintering furnaces, blast furnaces, BOFs, and other dust-generated facilities, high-performance dust collectors minimize airborne dust.

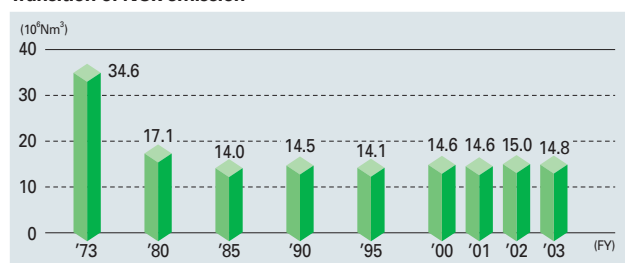
#### \*1) Ammonium-sulfate process

Flue gas treatment method which combines deammonification of coke oven gas and desulfurization of sintering flue gas. Research was carried out jointly by 9 steel companies (existing at the time) in 1971-1972, and practical application was achieved in 1976.

Transition of SOx emissions



Transition of NOx emission



## Water Quality Preservation and Water Recycling

Large quantities of water are used in steel manufacturing. JFE Steel performs complete purification treatment by various methods, including biological, physical, and chemical treatments, depending on the properties of the water after

use, and has adopted circulating use and cascade use\*1 of water, maintaining a high circulation ratio\*2 of approximately 94% of industrial water consumption. For release into public waters, wastewater is given thorough purification treatment. For example, wastewater containing organic substances is given biological treatment by activated sludge, followed by coagulating

sedimentation, filtration, and activated carbon adsorption (ammonia liquor).

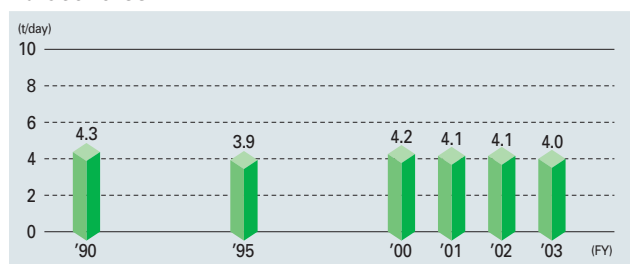
#### \*1) Cascade use

Multi-stage (cascade) use, in which use of resource is not completed in one step, but rather, the resource with its properties altered by use or waste discharged is used in a different application, followed by further use in another application.

#### \*2) Circulation ratio

Circulation ratio (%) = (Total consumption - received industrial water)/Total consumption

Transition of COD



Transition of industrial water circulation ratio

