Annual Environmental Report 2001

EAST JAPAN RAILWAY COMPANY

Committee on Ecology

4. Environmental Conservation along Railway Lines

Noise, vibration, and radio disturbance are among the effects of JR East operations on the environment along railway lines. Our thermoelectric power plant generates air pollutants, and various chemical substances are used in maintenance operations for railcars and business establishments as well. Aware of the need to mitigate these effects, we are engaged in developing the necessary measures to minimize the impact of our operations on the environment along our railway lines.

■Goals and progress

Item	Target value (to be met by fiscal 2005)	Results in fiscal 2000		Reference value (figure from fiscal 1990)
		Actual	Achievement	
NOx emissions at company-run thermoelectric power plant	**▲60%**	**▲58%**	414t	994t
Reduction of noise to less than 75dB in designated residential areas along the Tohoku and Joetsu Shinkansen Lines	**100%** (to be completed fiscal 2002)	**40% completed**	–	–

■JR East's efforts to promote environmental conservation along railway lines

Environmental conservation along railway lines

Measures regarding noise and radio disturbance
- Measures regarding noise for Shinkansen and conventional lines
- Other measures to counteract noise and radio disturbance

Reduction of environmental pollutants
- Appropriate management of chemical substances
- Appropriate management of industrial waste products subject to special control

Measures regarding noise and radio disturbance

Noise reduction along Shinkansen lines

The environmental criterion set forth by the Ministry of the Environment (former Environment Agency) regarding noise generation by Shinkansen cars limits peak noise level (Lmax) during operation, and is one of the world's strictest environmental standards. We have initiated various programs to meet these standards, including the construction and height extension of soundproofing walls, installation of sound-absorbent materials, installation of covers for pantographs, and implementation of measures to prevent flattening of wheels.

Our successful suppression of noise to levels of 75 dB or below for all "densely populated areas*" and "areas comparable to densely populated areas*" has been verified by the Ministry of the Environment. Currently, we are working toward a similar achievement for all "residential areas*," which we plan to complete by fiscal 2002. By fiscal 2000, we had already accumulated results and accomplished our objectives for 40% of the target area. For the Nagano Shinkansen Line, which went into operation in October 1997, the former Environment Agency confirmed that the criterion had been met in all applicable areas along the line.

Noise-reduction efforts in other areas include the use of rail-smoothing cars for the reduction of noise generated by uneven rails, and the introduction of new pantographs that generate significantly lower wind noise on the Akita and Yamagata Shinkansen Lines. We are also in the process of developing a single-arm pantograph and insulator designed to minimize noise. We plan to install these new units on the Shinkansen extension to Hachinohe.

* Based on the number and density of homes, neighborhoods along rail lines are classified as "densely populated areas," "areas comparable to densely populated areas," and "residential areas."

Noise reduction along conventional lines

The former Environment Agency established Guidelines on Anti-Noise Measures for New Construction or Major Renovation of Conventional Railways in December 1995. The objective of those guidelines was to regulate "equivalent noise level (Leq)" —a fundamentally different environmental criterion from that applied to the Shinkansen—under which frequency and duration of sound generation is incorporated in the evaluation of noise level. In the future, when planning construction of new conventional lines or major renovations to existing lines, we will include noise-reduction as a criterion from the initial design stage.

Triangular-peaked soundproofing device minimizes noise while preserving the view from railcar windows.

A Speno rail-grinding car

Single-arm pantograph and insulator designed to minimize noise

JR East is also working to reduce noise along existing lines through the use of continuous welded rails*1 and PC sleepers*2 and the reduction of railcar weight. Among the other noise-reduction efforts we are engaged in are reducing the noise produced by steel girders and developing railcars with quieter motors.

*1 Continuous welded rails: Each rail is at least 200 meters long
*2 PC sleepers: Sleepers made of pre-stressed concrete that are stronger than steel-reinforced concrete

Other measures to reduce noise and radio disturbance

We do our utmost to reduce noise and vibration caused by construction, railway maintenance, and other operations, which must occasionally be performed during nighttime hours. Local residents are always informed in advance when such night work is scheduled. We are also striving to reduce the need for nighttime work through the replacement of existing roadbeds with highly stable TC-type roadbeds which require less maintenance work.

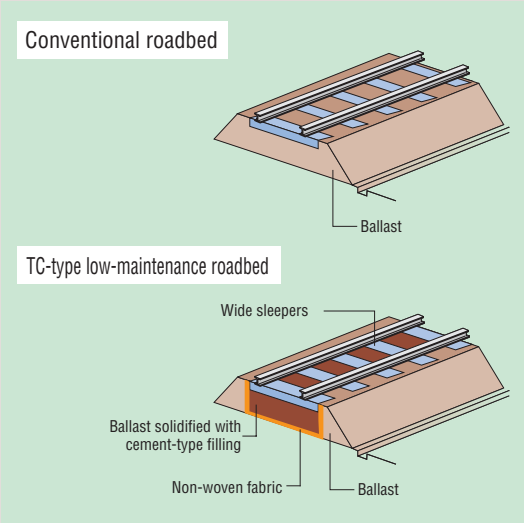
Along Shinkansen lines, television interference is sometimes caused when pantographs bounce over overhead wires. We are in the process of implementing measures to control such television interference for affected households.

Reduction of environmental pollutants

Air pollutants

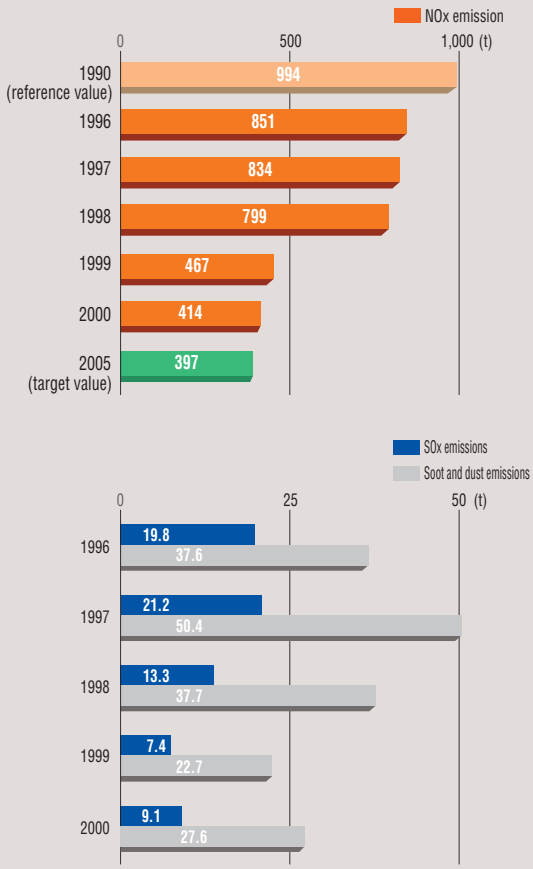
The company-run thermoelectric power plant at Kawasaki generates a significant volume of air pollutants. In that regard, we are converting fuels and renewing equipment to reduce NOx and SOx emissions and improve the facility's energy consumption efficiency. In 2000, NOx emission volume was 414 tons, SOx emissions 9.1 tons, and soot and dust emissions were 27.6 tons. Volumes of SOx, soot and dust emissions increased over the previous year, a fact that can be attributed to fuel mix and operating conditions. Though the current volume of emissions is well within regulatory limits, we are examining ways to achieve further reductions.

We are also working on replacement engines for diesel railcars, and on ways to enhance the function and durability of our low-pollution engines.



TC-type low-maintenance roadbed introduced to reduce labor spent in maintenance work

■Volume of NOx and other emissions from company-run thermoelectric power plant



* Data for volume of NOx and other emissions refers to totals for the entire calendar year (January 1 to December 31).

Incinerators

Under certain conditions, incinerators may generate dioxin. Currently, a portion of the refuse discarded at JR East's stations and on trains, as well as waste generated in business offices, is burned in our own incinerators. Careful monitoring and temperature control enables us to keep emissions below base-line values, but we are also in the process of consolidating and improving these incinerator operations. Virtually all of our incinerators with a capacity of less than 200 kg/h were taken out of service within fiscal 2000, while those with a capacity of 200 kg/h will be consolidated and renovated in an all-out effort to increase efficiency and minimize emissions.

Appropriate management and reduction of toxic substances

Chemical substances used in our business operations include organic solvents used for railcar painting at rolling stock workshops and herbicides used for weeding along railway tracks.

We used 693 tons of organic solvents in fiscal 2000, which were disposed of in an appropriate manner. In conjunction with the implementation of PRTR regulations in April 2000, we have initiated a system to carefully monitor the nature and volume of regulated substances transported and disposed of. We have also introduced paint-free cars on our commuter lines, with such cars accounting for approximately 46% of our rolling stock.

Weeds growing on and along railway tracks can seriously interfere with the safety of train operations. To control weeds, we used 328 tons of herbicides during fiscal 2000. In consideration of environmental impact, we only use herbicides with the lowest possible ratings for both mammalian and aquatic toxicity. We also take care to use minimum amounts and limit the area for application of herbicides.

PCBs

PCBs (polychlorinated biphenyls) have been used as insulation for high-voltage transformers and condensers in railcars, substations, and other facilities. As equipment using PCBs becomes obsolete, it is removed and stored in warehouses managed in accordance with strict regulations, under the supervision of personnel in charge of industrial waste materials subject to special controls. At present, the total weight of such materials in storage at JR East facilities is approximately 2,000 tons.

In accordance with special legislation outlining appropriate methods for processing PCB-contaminated wastes enacted in July 2001, we are working to develop safe yet effective methods of decontaminating this stock of PCB-contaminated waste within the shortest possible period of time.

Treatment of sewage from train washrooms

To put a stop to environmental damage caused by disposal of waste directly onto rail lines, we have been working on the installation of sewage-treatment equipment in train washrooms and at base rail yards. Installation of treatment equipment on the last 47 diesel railcars was completed in fiscal 2000, and all electric railcars, diesel railcars, and passenger cars are now equipped with enclosed washroom waste collection facilities.