Environmental Performance

We calculate the total inputs of energy and resources that are needed for our manufacturing activities and make efforts to understand their environmental load on the air and water.

Environmental Load from Manufacturing Activities

The environmental burden flowchart shows the materials, energy, water inputted for manufacturing products, production, discharge to atmosphere and the aquatic environment, and the output of industrial wastes. We make efforts to grasp the entire picture of environmental burdens produced by Nissan Chemical.

2013 Environmental Load Results Flow

INPUT

- **Raw materials**
- **Energy input** 94,751kL(Crude oil equivalent) — Energy : Fuel, purchased power and purchased steam to be used fo business activities (Fuel and purchased steam are converted into crude oil equivalent value)
- **Water resources input** 41,335,000m³ — Water resources : Tap water, underground water, andindustrial waterto be used for business activities

Manufacturing activities (5 plants)

OUTPUT

Emissions to the atmosphere

CO_2	305,000tons-CO_2
Greenhouse gas other than CO_2	153,000tons-CO_2
NOx	146tons
SOx	381tons
Dust	26tons
Substances specified in the PRTR Act	1.8tons

Emissions to the atmosphere
CO_2: Amount of CO_2 that was emitted through business activities
Greenhouse gas other than CO_2 : 4 types of gasses, including CH_4, N_2O, HFC and SF_6
NOx, SOx,dust : Volume of NOx, SOx, and dust included in the emitted gas from each burning facility

Emissions to the water area

Discharged water	15,259,000m³
COD	249 tons
Total nitrogen (T-N)	3,123 tons
Total phosphorus (T-P)	11 tons
Substances specified in the PRTR Act	0.51 tons

Emissions to the water area
Total nitrogen (T-N), Total phosphorus (T-P), COD: Volume was calculated by multiplying the water volume discharged to the public waters by the concentrations of nitrogen, phosphorus and COD.

Emissions to the soil
Substances specifiedin the PRTR Act 0.00tons

Waste

Generated waste volume	26,303 tons
Recycled volume	2,386 tons
External final waste volume	1,502 tons

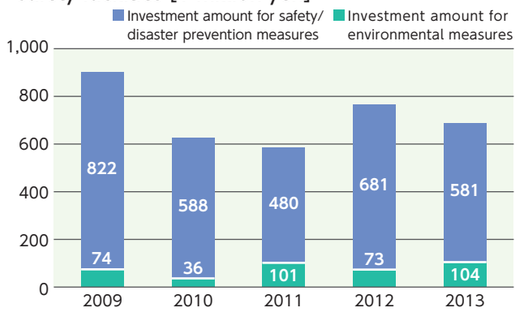
Waste
Recycled volume:Volume of recycled waste
External final waste volume:The final waste volume fulfilled by waste disposable contractor

Investment in Facilities for Environment/Safety

As shown by cases in recent years, accidents at chemical plants bring tremendous damage to the neighboring areas. We not only conduct daily inspection but also carry out continuous and planned facility investment in order to secure safe and stable operation.

We also continuously make investment for environmental consideration and environmental load reduction.

Investment amount for environmental facilities/ safety facilities [1 million yen]



Pre-Assessment for Responsible Care and Quality Assurance

In order to secure environmental safety in our business activities and quality assurance, the Company conducts evaluation at each step from synthesizing chemical substances (or products), research and development, manufacturing to launching of the products. This evaluation is conducted not only for new products and new brand products but also at the time when the process is changed for existing products in order to assess the applicability of the business.

Conducting Pre-Assessment

Stage	Section in charge of evaluation	2011	2012	2013
Research and development	Research Laboratories	23	24	16
Industrialization Study	Plant (technological development section)	5	8	14
Production	Manufacturing plant (manufacturing section)	92	106	110
Total		120	138	140

Evaluation item

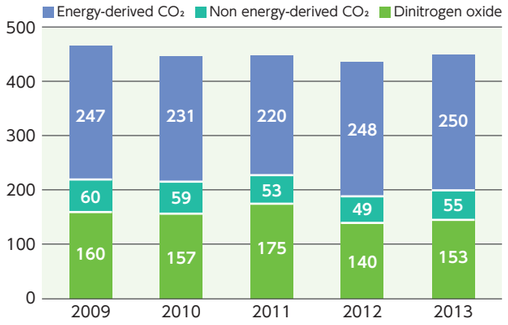
1. Compliance with laws and agreements
2. Safety and environmental impact of chemical substances we handle
3. Occupational safety and health for workers
4. Safety of used equipment
5. Product safety and reduction of environmental loads
6. Safety in logistics
7. Reduction of industrial wastes
8. Quality assurance
9. Environment and safety in production outsourcing, purchase, and sale

Prevention of Global Warming

In accordance with the “Act on Promotion of Global Warming Countermeasures”, we calculate the volume of CO_2 and other greenhouse gas emissions from all of our branches and offices including plants, laboratories and head office and submit our report to the government. The greenhouse gas emission of FY2013 was 5% more than that of the previous fiscal year. This is because our plants purchased a large volume of electrical energy, indicating increase in production activities was larger than reduction in CO_2 and greenhouse gas emission as a result of energy saving.

About a one half of the greenhouse gas of Nissan Chemical is composed of nitrous oxide (N_2O). Although N_2O can be used as laughter gas for medical purposes, most of the N_2O is generated from the nitric acid plant. Because the global warming potential (GWP) value is 310 times larger than that of CO_2, it occupies a large percentage of our greenhouse gas emissions.

Transition of greenhouse gas emissions [1,000 tons -CO_2]

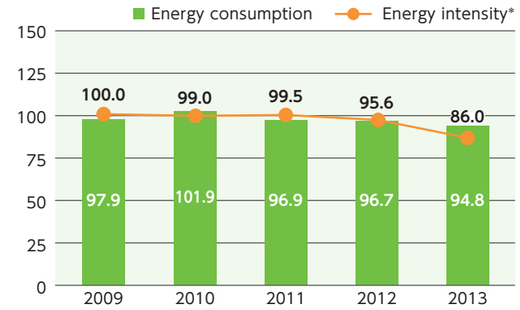


Energy Consumption, Energy Intensity

In accordance with the “Act on the Rational Use of Energy”, we consolidate the total energy consumptions of all locations and report them together with the energy consumption rates. In FY2013, although the production amount increased by 3%, we managed to decrease the energy consumption by equivalent to approximately 1,900 kL of crude oil as compared to previous year.

Nissan Chemical has a wide range of product matrix from all-purpose chemical products, agrochemicals, pharmaceuticals, to functional products for electronics materials. Our product matrix has drastically changed from 1990, and it became difficult to assess the energy consumption rate based on the simple production amount standard. Therefore we calculate it based on the sales and floor area (laboratory, etc.). As compared with the energy consumption rate of FY2009, we managed to achieve 14% improvement of the rate in FY2013.

Transition of energy consumption and intensity index [Crude oil 1,000kL]



*Because the figure that has close relationship with energy consumption amount differs depending on business category, the graph shows the relative changes, taking the level of energy consumption in FY 2009 as a base of 100.

Our Actions for Saving Energy in the Logistics Site

As a consigner, Nissan Chemical is streamlining the use of energy for transportation together with Nissan Butsuryu, a subsidiary company that handles our logistics. Our energy consumption in crude oil equivalent and energy consumption rate in FY 2013 slightly deteriorated from the previous year because we had many parcel transportation and transportation efficiency was not very good. We will continue making efforts to improve energy consumption rate by promoting modal shift, updating to energy-saving vehicles and promoting green driving.

Transition of energy consumption and energy intensity in the logistics department