

One of the environmental impacts in our production activities is the emission of chemical substances. Although chemical substances are indispensable for production activities, they can have a grave effect on the environment if they are not controlled in an adequate way. Oki group is well aware of this effect and therefore working to control and reduce chemical substances.

1 Control of Chemical Substances

Among the chemical substances used at production plants, we identify those with a serious effect on the environment and control them by classifying them into three types: prohibited substances (95 substances), restricted substances (92 substances) and voluntarily controlled substances (389 substances).

2 Efforts for Reducing Chemical Substances at Production Plants

Efforts for the PRTR system

The PRTR (Pollutant Release and Transfer Register) system is one of the methods to track the emission of substances with a grave effect on the environment.

A law concerning the implementation of PRTR was enforced in July 1999, and the first reporting based on this law was started in April 2002.

Ahead of the legislation, we started to work on the PRTR system in 1997, following the guidelines issued by the Electrical and Electronics Industry Association, and have published the details in our environmental reports. In 2002, the emissions of substances subject to the PRTR system were reduced by 48% of the total for 2001.

2002 result of emissions of substances subject to PRTR

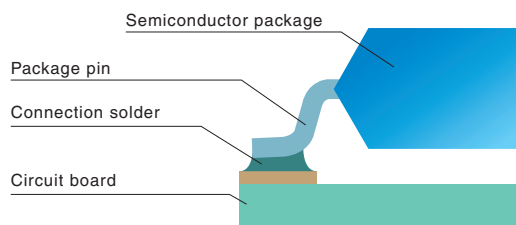
(unit: ton)

Chemical substance	Amount handled	Amount emitted				Amount shifted	
		Into air	Into water	Into soil	Total	To sewer	Out of site
Hydrogen fluoride and its water-soluble salt	145.09	0.02	0.18	0	0.20	0.02	39.33
Xylene	31.73	5.44	0	0	5.44	0	23.31
Formaldehyde	11.67	0.93	0	0	0.93	0	10.67
Nickel compounds	7.61	0	0.07	0	0.07	0	6.29
2-aminoethanol	6.77	0.83	0	0	0.83	0	3.77
Boron and its compounds	6.40	0	0	0	0	0	0.26
1, 1-dichloro-1-fluoroethane	6.05	0	0	0	0	0	0
Lead and its compounds	5.63	0	0	0	0	0	0
Copper water-soluble salt(excluding complex salt)	4.63	0	0	0	0	0	4.58
Toluene	4.25	2.18	0	0	2.18	0	0.52
Acetic acid 2-ethoxyethyl	1.81	0.29	0	0	0.29	0	1.31
N, N-dimethylformamide	1.76	0.32	0	0	0.32	0	1.44
2002 total	233.40	10.01	0.25	0	10.26	0.02	91.48
2001 total	191.57	19.29	0.40	0	19.69	0.02	88.78
2000 total	283.20	27.10	0.63	0	27.73	0.03	92.91

Complete elimination of lead-free solder on printed circuit boards

The surface of semiconductor package pins is plated with solder that contains lead - a substance subject to the PRTR system. In fiscal 2002, Oki Electric succeeded in the development of a technology to make this solder plating lead-free, and installed the equipment of lead-free solder plating in semiconductor manufacturing plants in and outside of Japan. As for eliminating the lead in the solder connecting the circuit board with the semiconductor package pins, we completed the development of the technology, installed the corresponding equipment at our group company Nagano Oki Electric in 2001, and are moving towards mass production.

Printed circuit board



Efforts for reducing chemical substances at semiconductor manufacturing plants

When newly employing a chemical substance, we evaluate its effect on safety, disaster prevention and the environment. Substances that do not pass this evaluation cannot be purchased. We further built a system to know how much of the chemical substances put into the manufacturing process are ultimately emitted in waste gas, wastewater, or waste material. Based on these data, we are promoting activities to reduce their use through improvements of the manufacturing process, to change to substitutes with a lower environmental impact, or to totally eliminate their use.