Safety Evaluation of Domestic Facilities

Safety Evaluation of PRTR Substances

How to assess effects on human health and ecosystems

Under the PRTR Law, reporting on emissions of chemical substances into the environment is required. Environmental effects clearly depend not only on the quantity of emissions, but also on their toxicity. In order to reduce environmental impact from chemical substances, it is therefore necessary to take action based on comprehensive evaluations of emissions and toxicity for each substance.

In this respect, started in 2006, we calculate "converted emissions"—"the quantity of emission" of each chemical substance covered by the PRTR Law, multiplied by its "toxicity factor" in accordance with Kanagawa Prefecture's "Guidelines on Assessment of Safety Impact of Chemicals." Converted emissions of PRTR substances at each plant are then added up, and are compared with the safety evaluation table wherein the effects on human health and ecosystems are ranked, to show where each plant stands in its effort to reduce PRTR substances.

Using the Hiratsuka Factory as an example, total converted emissions in the category of effects on human health are 455 tons, and the factory is thus ranked "IV." Total converted emissions in the category of effects on the ecosystem are 1,990 tons, thus a ranking of "2." Accordingly, the safety evaluation of the Hiratsuka Factory is described as "IV-2."

Improvements in FY2009

Atmospheric emissions from the Hiratsuka Plant were reduced substantial by the installation of an Ethylene Glycol Monomethyl Ether (EGME) collector in FY2009, and the Human Health ranking consequently improved one rank relative to FY2008. However the Ecosystem ranking fell one rank due to the increase in xylene usage.

At the Shinshiro Plant, the complete phase-out of toluene and xylene saw the Human Health ranking rise one rank while the Ecosystem ranking rose by an impressive three points.

The Human Health rankings of the Onomichi Plant and the Ibaraki Plant both rose by one rank due to a decrease in xylene usage.

FY2009 Safety Evaluation Ranking (impact on humans and impact on ecosystems)

During FY2009 there were no emissions with a severe impact on either humans or ecosystems.

The red arrows in the table below indicate progress since FY2008.

Description of safety evaluations

Guidelines on Safety Evaluation of Chemical Substances (Kanagawa Prefecture, 2007)

Toxicity ranking and toxicity factor

Rank	A	B	C	D
Toxicity factor	1000	100	10	1

Ranking of effects on human health

Rank	Total converted emissions (Effects on human health)
I	10,000 tons or more
II	3,000 tons to 10,000 tons
III	1,000 tons to 3,000 tons
IV	300 tons to 1,000 tons
V	100 tons to 300 tons
VI	30 tons to 100 tons
VII	10 tons to 30 tons
VIII	Less than 10 tons

Ranking of effects on the ecosystem

Rank	Total converted emissions (Effects on the ecosystem)
1	10,000 tons or more
2	1,000 tons to 10,000 tons
3	100 tons to 1,000 tons
4	10 tons to 100 tons
5	Less than 10 tons

Toxicity coefficients for main PRTR substances

Designated No.	Specified chemical substance	Cas No.	PRTR toxicity rank	
			To humans	To ecosystems
40	Ethylbenzene	100-41-4	C	A
45	Ethyl Glycol Monomethyl Ether (EGME)	109-86-4	B	D
63	Xylene	1330-20-7	C	A
198	Hexamethylenetetramine	100-97-0	C	D
227	Toluene	108-88-3	C	D