

SF₆ in the Japanese Magnesium Industry

**Japan Industrial Conference for
Ozone Layer Protection
(JICOP)**

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Activities of JICOP (1)

- **Ozone layer protection**
- **Global warming mitigation (HFC-PFC-SF₆)**
- **Membership: 45 industrial associations related to HFC, PFC, and SF₆ including automobile, electric appliance, electronics, and power industry**

Activities of JICOP (2)

- **19 industrial associations submitted Voluntary Action Plan in emission reduction to MITI in 1998**
- **MITI reviews every year** □
- **SF₆ action plan of magnesium industry is not included in this system**

Emission Estimates by Industries

	(mm GWP ton)				
	1995	1996	1997	1998	1999
Chem. Manuf. Total	22.9	21.2	19.0	17.5	17.0
HFC- 23	17.0	15.6	14.7	13.8	14.1
HFCs	0.4	0.4	0.3	0.2	0.1
PFC	0.8	1.0	1.4	1.4	1.3
SF6	4.7	4.2	2.6	2.1	1.5
Foamed Plastics Total	0.5	0.4	0.4	0.4	0.4
PU	0	0	0	0	0
PS	0	0	0	0	0
PE	0.5	0.4	0.4	0.4	0.4
Phenolic Foam	0	0	0	0	0
Aerosol	1.4	2.1	2.6	2.8	2.8
Mobile AC	0.6	1.0	1.4	1.7	2.0
Domestic AC	0	0	0	0.0	0.0
Commercial Ref.	0	0.0	0.0	0.0	0.1
Household Ref.	0.0	0.0	0.0	0.0	0.0
Cleaning and others	7.0	6.7	8.2	6.7	5.1
Semiconductor Manuf.	5.2	5.5	5.9	6.2	6.3
PFC	3.6	3.9	4.4	4.6	3.8
SF6	1.6	1.7	1.5	1.6	2.5
SF6 for Electricity Total	11.0	11.7	10.3	9.1	5.0
Manufacturing	9.6	10.0	8.5	7.7	4.2
Transformer	1.4	1.7	1.8	1.3	0.8
Tot	48.5	48.8	47.8	44.4	38.7
HFC	19.8	19.6	19.5	19.0	19.6
PFC	11.7	11.6	14.0	12.6	10.1
SF6	17.3	17.6	14.3	12.8	9.0

National Report (2000)

	(MMTCO ₂ eq)	
	Potential Emission	Actual Emission
HFC	31.6	19.0
Application	17.6	5.0
Production	14.0	14.0
PFC	19.2	12.7
Application	17.8	11.3
Production	1.4	1.4
SF₆	52.3	12.8
Application	50.2	10.7
Production	2.1	2.1
Total	103.1	44.5
Application	85.6	27.0
Production	17.5	17.5

SF₆ Application in Japan

- **SF₆ consumption: 2,100 tons in 1998**
- **Power plant insulation: mostly**
- **Semi-conductor: less than 100 tons**
- **Magnesium: 20-30 tons, increasing recently**
- **Power plant and semi-conductor industries have Voluntary Action Plan for emission reduction**

Application of Mg Alloy by Die-Casting and Gravity Casting

- **5,000 tons in 1999, increasing 7% per year**
- **Automobile (core of steering wheel, steering lock housing, cylinder head cover)**
- **Electronics (note PC, video camera, cell phone)**

SF₆ for Magnesium Industries

- **Die-casting and gravity casting**
- **No. of casting companies: about 50**
- **SF₆ covering gas: 0.3%-3%/CO₂/dry air**
- **SF₆ consumption: 22 tons in 1999,
equivalent to 1.5% of total emission in
HFC, PFC, and SF₆**

Actions by Japan Magnesium Association (JMA)

- **Membership of JMA is 154 companies**
- **Most of the companies using SF₆ are included**
- **Study of emission reduction technologies**
- **Field test of alternative covering gases N₂**
 - **50% Ar, 0.8% SO₂/dry air**
- **Cooperation in IMA project**

Future Action

- **More accurate estimation of SF₆ consumption**
- **Voluntary Action Plan for SF₆ emission reduction expected**
- **Participation in review system of MITI expected**
- **JICOP cooperates with JMA**