

Success of “Voluntary Emissions-Reduction Programs” in reducing VOCs emissions in Japan

What are VOCs ?



VOCs stands for “Volatile Organic Compounds”. Examples are toluene, xylene and ethyl acetate which are found in paint, printing ink, glue, detergent, gasoline or paint thinner, which are commonly known substances. Photochemical reactions involving these substances is considered to be one of the causes of photochemical smog.

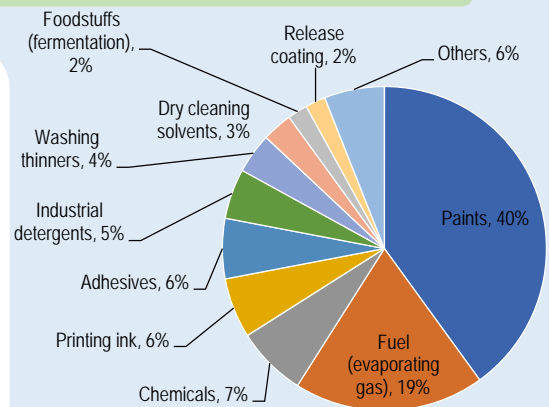


Figure: Sources of VOCs in FY 2014

(Source) Ministry of Environment Japan “VOCs Emissions Inventory”

Why do we have to reduce VOCs emissions ?



When VOCs are emitted into the atmosphere, photochemical oxidants are formed in the lower atmosphere through photochemical reactions which **cause photochemical smog**. Smog is **harmful to people’s health**. Besides VOCs, substances like NO_x , SO_2 or NH_3 are also known as components of photochemical smog.

Besides smog, VOCs also cause health hazards including **sick building syndrome (SBS)** and **multiple chemical sensitivity (MCS)** in working environments and housing spaces.

To reduce emissions of VOCs...

In FY 2010, emissions were reduced by more than **40% compared to FY 2000 !** (the target was 30%)

Legal regulation

For the following six facility types, a minimum threshold for ventilation capacity was introduced. Reference values for VOCs concentration levels were established for facilities in which these thresholds are exceeded.

- Manufacturing facilities for chemical goods
- Painting and coating facilities
- Glue-related facilities
- Printing facilities
- Facilities using industrial detergents
- VOCs storage

VOCs Voluntary Emissions-Reduction Programs

Industries and companies have the option of voluntarily creating plans to take measures that suit their own circumstances.

Industry groups set their target for emissions reductions in their VOCs Voluntary Emissions-Reduction Programs. Members of the industry group implemented actions that suited them and worked together with others by sharing effective methods for reducing VOCs emissions.

Let us show you some examples of the voluntary efforts



In the revised Air Pollution Control Act (implemented from April 2006), the reduction of VOCs emissions is promoted through the combination of legal regulations and the VOCs Voluntary Emissions-Reduction Programs.

Effect of the Voluntary Emissions-Reduction Programs

"Results" shown in numbers

About 0.182 million tons of VOCs emissions were covered by the voluntary emissions-reduction programs in 2014, which was 66% less than the figure in 2000. The total amount of VOCs emissions in Japan for 2014 was 0.692 million tons. The reduction rate for the same period was 50%, demonstrating that the programs had an outstanding effect.

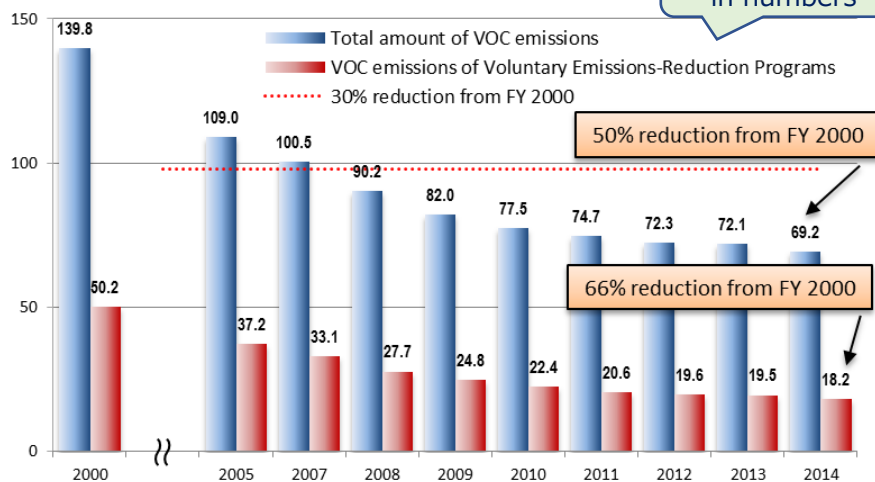


Figure: VOCs emissions in units of 10,000 tons VOCs
(Source) VOCs Voluntary Emissions-Reduction Programs

Examples of the Voluntary Emissions-Reduction Programs

Industry	VOCs reduction target processes	Main voluntary efforts
Printing	<ul style="list-style-type: none"> Printer cleaning Volatilization from stock solutions and waste cloth 	<ul style="list-style-type: none"> Installation of VOCs alarm Installation of UV printers Employee education on risks and need to control VOCs
Chemistry	<ul style="list-style-type: none"> Adhesives Coating process 	<ul style="list-style-type: none"> Change to VOCs-free Material
Car maintenance	<ul style="list-style-type: none"> Open-air paint and body work 	<ul style="list-style-type: none"> Installation of in-house-developed VOCs-decomposition scrubber

The efforts to reduce VOCs emissions had a great impact in Japan ! !

In Japan's approach to decreasing VOCs emissions, the Voluntary Efforts Program plays a significant role. It started in 2005 with 22 organizations participating. In 2014 the program included 40 organizations with 7,300 companies participating.

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