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.

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.

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\textsubscript{x}, SO\textsubscript{2} or NH\textsubscript{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.

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

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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.
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.

Examples of the Voluntary Emissions-Reduction Programs

<table>
<thead>
<tr>
<th>Industry</th>
<th>VOCs reduction target processes</th>
<th>Main voluntary efforts</th>
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| Printing        | • Printer cleaning  
• Volatilization from stock solutions and waste cloth                | • Installation of VOCs alarm  
• Installation of UV printers  
• Employee education on risks and need to control VOCs |
| Chemistry       | • Adhesives  
• Coating process                                                     | • Change to VOCs-free Material                                                        |
| Car maintenance | • Open-air paint and body work                                        | • 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.