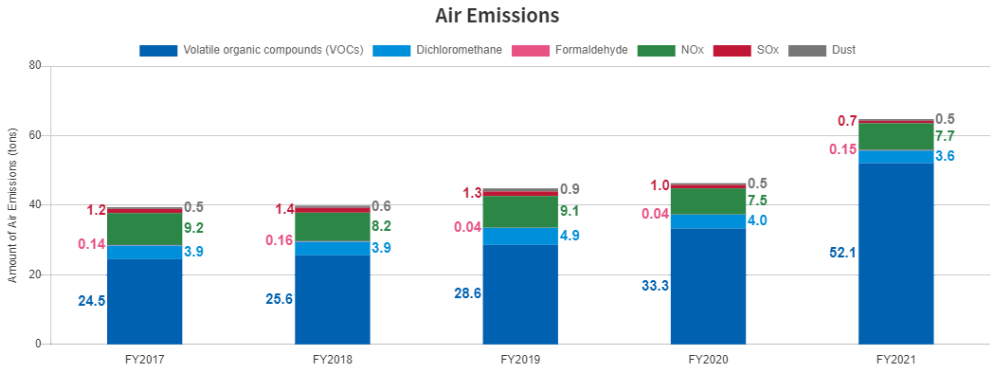
# Prevention of Air Pollution

The Nippon Kayaku Group is engaging in the careful management of substances that cause air pollution by categorizing them into those that fall under Japan's Air Pollution Control Act, those that are hazardous air pollutants, and all other air pollutants.
During FY2021, VOC emissions increased because we used aeration treatment to remove impurities from some solvents.
As for hazardous air pollutants, the Japan Chemical Industry Association has taken the initiative in defining 12 control substances[*1] as those that should be voluntarily managed, with efforts being made to reduce emissions of them. Of these 12 control substances, five have been used by Nippon Kayaku since FY1995, but the use of benzene during the production process was terminated during 1995. Emissions of chloroform and ethylene oxide have been cut to zero since FY2007. Slight emissions of dichloromethane and formaldehyde continue to occur. Going forward, we will continue to make improvements to our production processes and other areas in order to reduce emissions, and will strive to reduce dichloromethane and formaldehyde emissions, largely by reducing the use of these substances.
As for other air pollutants, sulfur dioxide (SOx)[*2], nitrogen oxide (NOx)[*3] and dust[*4] are emitted during boiler operations. For the fuel used by its boilers, the Nippon Kayaku Group has been gradually transitioning from Bunker C heavy oil to Bunker A, which has a lower sulfur content, and is further shifting to the use of LPG and natural gas, which are sulfur-free. As a result, our SOx emissions have been in continuous decline since FY2008. We will continue in our efforts to reduce overall emissions of air pollutants into the atmosphere by performing regular inspections and keeping up the proper maintenance of our air pollution prevention equipment.

## Air Emissions

| Indicator | Scope | Unit | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|---|---|---|---|---|---|---|---|
| Volatile organic compounds (VOCs) | Non-consolidated | tons | 24.5 | 25.6 | 28.6 | 33.3 | 52.1 |
| Dichloromethane | Non-consolidated | tons | 3.9 | 3.9 | 4.9 | 4.0 | 3.6 |
| Formaldehyde | Non-consolidated | tons | 0.14 | 0.16 | 0.04 | 0.04 | 0.15 |
| NOx | Non-consolidated | tons | 9.2 | 8.2 | 9.1 | 7.5 | 7.7 |
| SOx | Non-consolidated | tons | 1.2 | 1.4 | 1.3 | 1.0 | 0.7 |
| Dust | Non-consolidated | tons | 0.5 | 0.6 | 0.9 | 0.5 | 0.5 |




*1 The 12 control substances subject to voluntary control are as follows: acrylonitrile, acetaldehyde, vinyl chloride monomer, chloroform, 1,2-dichloroethane, dichloromethane, tetrachloroethylene, trichloroethylene, 1,3-butadiene, benzene, formaldehyde and ethylene oxide.
*2 SOx (sulfur oxide): SOx is emitted when fossil fuels that contain sulfur are burned. SOx reacts with moisture in the atmosphere to form sulfuric acid and sulfurous acid, which are causes of air pollution and acid rain.
*3 NOx (nitrogen oxide): NOx is produced when burned chemical substances react to nitrogen in the air and when fuels and chemical substances that contain nitrogen compounds such as coal are burned. Not only is it a major cause of air pollution including photochemical smog and acid rain, but NOx also has a harmful effect on the human respiratory system.
*4 Dust: Dust mainly refers to fine particles (soot) found in dust smoke produced when burning fossil fuels. In addition to being a major cause of air pollution, dust can cause humans to contract pneumonoconiosis or other harmful health conditions when breathed in in high concentrations.