



Air Quality Management

Under the ASEAN Economic Community liberalization act, ASEAN has developed environmental cooperation but such efforts have yet to tackle the adverse impacts effectively. Air, which is essential for human life, has been affected due to air pollution, mainly from domestic activities, such as energy usage, transportation, manufacturing and construction, and this has extended across the ASEAN region.

SCG has used the best available technology in the management of air pollution, such as installing the most efficient air treatment system along with continuous monitoring of air quality through Continuous Emission Monitoring Systems (CEMS). In addition, we have arranged a mobile laboratory, which can monitor the environment according to international standards (ISO 17025) and alert us if there is any risk at any time. Employees and individuals associated with the air treatment system must be trained according to the air pollution control requirements of the Department of Industrial Work. In addition, SCG has applied the Total Quality Management (TQM) and the Total Productive Maintenance (TPM) principles in the management of air quality control systems in order to improve the performance of the mechanical equipment and reduce its damage and downtime.



Oxides of Nitrogen

Oxides of Nitrogen in SCG are mainly caused during combustion in a kiln at the temperature above 1,000 degrees Celsius of the cement production process, and partly from molecular nitrogen in the fuel which reacts with oxygen in the combustion chamber. SCG is a member

of the World Business Council for Sustainable Development-Cement Sustainability Initiative (WBCSD-CSI) and has shown its commitment to controlling the rate of emissions of oxides of nitrogen gas, by not allowing it to exceed 1,700 grams per ton of clinker. This required the usage of high-performance technology, which led to the installation of a Low NOx Burner in all of SCG's cement plants to reduce the formation of oxides of nitrogen, and the control of the combustion process, which allowed for the appropriate proportion of fuel, and reduced excess air in order to reduce the reaction between nitrogen and oxygen.

Map Ta Phut in Rayong province is another area that gives importance to the oxides of nitrogen (Carrying Capacity) due to power plants and chemical industries within the region which require high-temperature combustion. SCG Chemicals recognizes the importance of the reduction of oxides of nitrogen, in particular, in the cracker furnace and, therefore, started using an Ultra-Low NOx burner. This has reduced the emission of nitrogen oxides equivalent to up to 80 percent and has also reduced power consumption. Hence, SCG has designated the Ultra Low NOx burner as minimum standard equipment for each chemical factory set up, right from the planning process itself.



Oxides of Sulfur

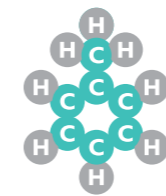
The main cause of acid rain is sulfur dioxide, 90 percent of which occurs in the manufacturing and the burning process of fossil fuels, especially coal, which contains sulfur. SCG Paper, which uses coal as the main fuel for heating its boilers, has therefore taken measures to reduce the formation of oxides of sulfur. This has been done through control

of the entire process, from the selection of high-quality coal with low sulfur and an increase in the usage of biomass and waste rejected from waste paper raw materials so that it can be used as an alternative to coal. In addition, air is treated before it is released by adding limestone to it in order to create gypsum for use in the cement manufacturing process. In 2014, SCG successfully reduced emissions of sulfur dioxide by up to 39 percent.

Particulate Matter



Particulate matter is the main issue causing air pollution in the cement production process. This happens in the crushing stage of the raw materials, the combustion process and its reaction, the crushing of the clinker, the product packaging process as well as during the transportation or arrangement of raw materials and cement. Being a member of the WBCSD-CSI, SCG has shown its commitment to controlling the amount of particulate matter emitted from the stacks in the cement production process, which must not exceed 150 grams per ton of clinker. SCG has used various measures to achieve the set goals, such as the installation of a dust collecting system with highly efficient electrostatic precipitators and filter bag systems, making it possible to increase the efficiency of dust collection to as high as 99.9 percent. In addition to the above, the building design and the construction conveyor systems have been set up in a closed area in order to prevent the spread of particulate matter outside the operational area.



Volatile Organic Compounds (VOCs)

VOCs in the petrochemical industry is caused by the raw materials, products and by-products. Some of the volatile organic compounds affect the health of those exposed, such as benzene, toluene, and butadiene, while some volatile organic compounds create ozone, an air pollutant,

at the Earth's surface causing irritation to the respiratory tract. Therefore, SCG Chemicals has provided surveying and mapping of the sources of volatile organic compounds in various units such as tanks of raw materials, products, loading and unloading of materials or products, wastewater treatment and residual substances left over in the burning flares. Consequently, SCG has taken measures to improve related processes in order to lessen the spread and leakage of VOCs, such as changing material handling systems so that they are transported from below; covering the sewage system; inspecting and repairing joints, valves and pipe fittings; improving each sampling point by turning it into a closed system; changing the plant design into a closed system; choosing the valve stems (Bellow seal valve) and leak-proof pumps (Sealless pumps); and choosing naphtha tanks with covered ceilings. All of the above made it possible to control the ventilation and leakage of VOCs to achieve a result 30 percent better than the international standard.



Ozone Depleting Substance

ASEAN member countries have signed the Montreal Protocol. Following this, in Thailand, SCG has banned the use of ozone depleting substances, especially in the manufacturing of new products since 1998 as well as SCG subsidiaries in ASEAN have begun to reduce the use of chlorofluorocarbon continuously since 2006. At the same time, SCG also explored the use of equipment with ozone depleting substances in order to gradually switch to a device that does not contain Halon. This mission is expected to be completed in 2020 and includes the use of a specially designed office building. In 2012, SCG renovated the Company's headquarters building. Hence, the prescribed cooling was R-123, which has reduced the impact to the ozone layer compared to the earlier substances by up to 98 percent and has been defined as a standard for new buildings, such as the SCG 100th year building.