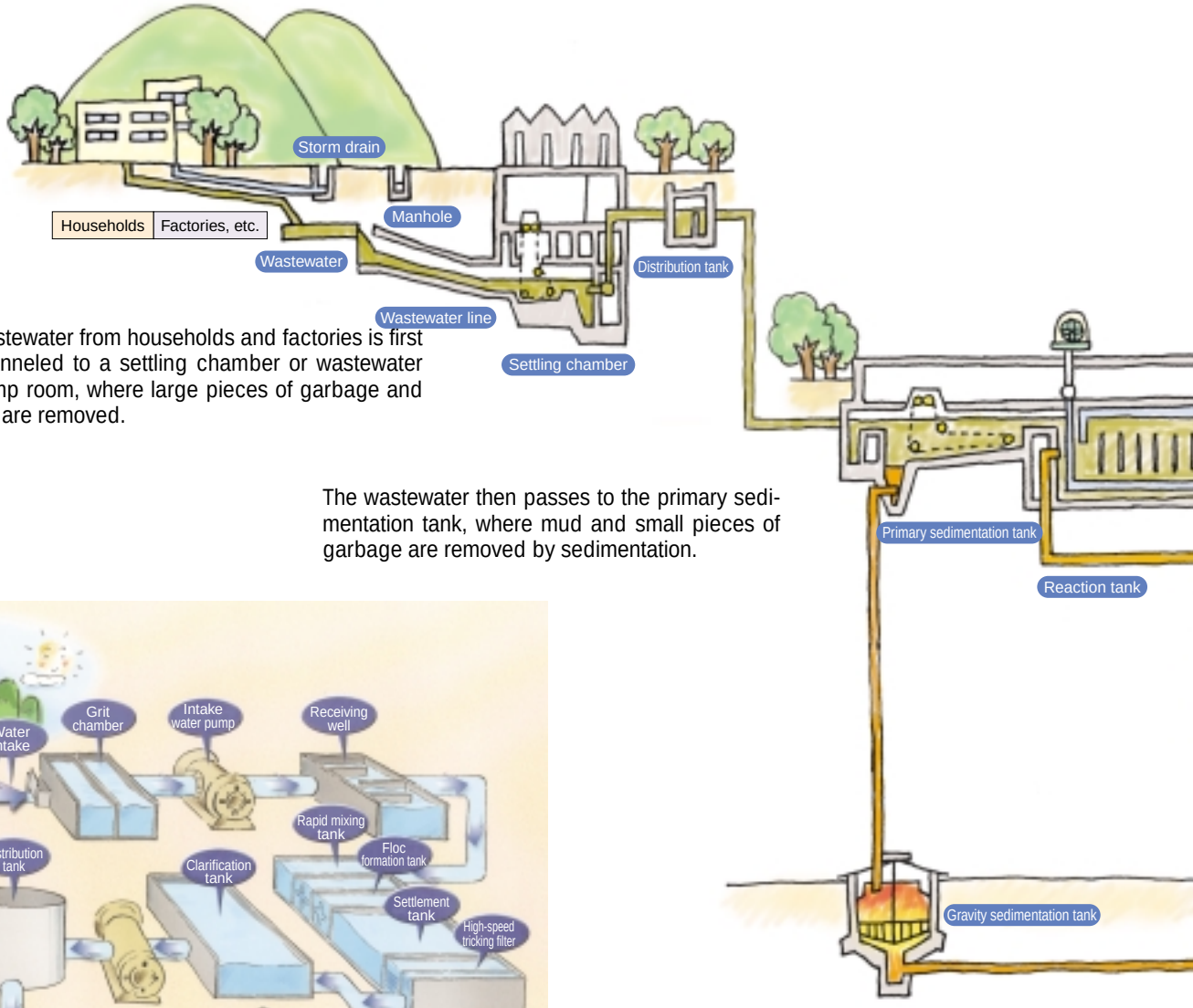
# Water Treatment Systems and Shimadzu Measurin

## Securing our water: the vital element of life and industry

Along with the rising of population in urban areas and rapid expansion of industrial infrastructure, the issue of securing water resources is drawing increasing attention in many parts of the world. With significant change in the precipitation pattern due to the influence of global warming, there is a growing need to ensure constant supplies of drinking, domestic, and industrial water. At the same time, there is the problem of water pollution, which requires urgent solutions, including adequate water treatment at the most effective point and timing. When addressing water issues, water quality control regulations are an important factor. These regulations are constantly being revised to meet the ever changing situation.

Shimadzu, as a comprehensive manufacturer of analytical instruments and process control systems, offers a broad range of effective systems and instruments for today's complex and sophisticated water treatment systems, utilizing its wealth of software technology and expertise in the area of scientific instrumentation.

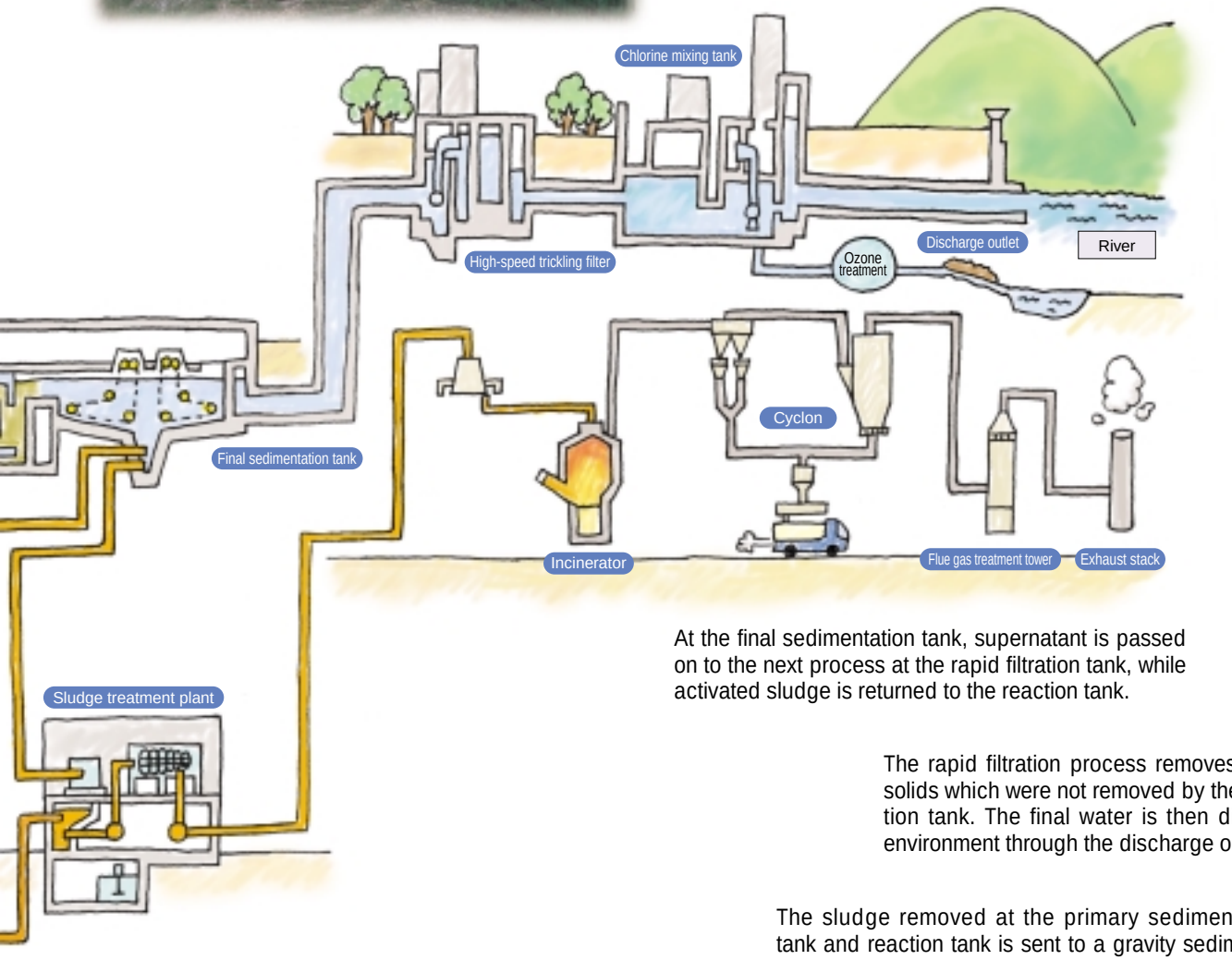



Wastewater from households and factories is first channeled to a settling chamber or wastewater pump room, where large pieces of garbage and soil are removed.

The wastewater then passes to the primary sedimentation tank, where mud and small pieces of garbage are removed by sedimentation.

# g Instruments

In these processes, a variety of chemicals are used, such as chlorine for sterilization, neutralizing agents and coagulants. Accordingly, a wide variety of analytical instruments play critical roles at all stages. Their applications include: quality inspection of incoming wastewater, water stored in tanks and final water discharge; measurement and monitoring of pH values and alkalinity levels after the addition of gases or chemicals; and monitoring of controlled substances in the discharged water and emitted gas. Shimadzu's product lineup includes on-line analyzers for continuous monitoring of specific substances and process conditions as well as laboratory analyzers.




At the final sedimentation tank, supernatant is passed on to the next process at the rapid filtration tank, while activated sludge is returned to the reaction tank.

The rapid filtration process removes fine suspended solids which were not removed by the final sedimentation tank. The final water is then discharged to the environment through the discharge outlet.

Next, in the reaction tank (aeration tank), activated sludge containing a large quantity of microorganisms is added to the wastewater and air is blown into the mixture. As a result of the reaction, the microorganisms and dirt precipitate to form a floc.

The sludge removed at the primary sedimentation tank and reaction tank is sent to a gravity sedimentation tank or sludge treatment plant where it is reduced. The sludge is then dried in a water extractor and formed into cakes. Finally, the cakes are incinerated. Foul odors and dust are removed using an electric dust extractor and flue gas treatment tower.