

Laboratory of Environmental Analytical Chemistry

Yuji TAKAO

takao@nagasaki-u.ac.jp



Research outline

Human lives are supported by various chemicals. After they are used, chemicals are emitted into the environment in varying concentrations. Harmful chemicals are also occasionally released into the environment. Our research focuses on analyzing and understanding how trace amounts of harmful organic chemicals affect the environment.

Research theme

- **Analysis of hazardous chemical substances contained in the atmosphere which carries out long-distance movement of East Asia, and evaluation of biological influences**

Nagasaki is located on the west coast of Japan and is well positioned for the collection of air samples from northern China, a region that has undergone rapid economic growth. Our lab has been working year-round on conducting atmospheric of sampling long-range



-transported atmospheric samples at an observation station located on the top of a mountain on the Nishisonogi Peninsula. The data that we have recorded and evaluated using *umu*-Tests has clearly demonstrated that the concentration of carcinogenic chemicals is greater during the winter months.

- **Investigation of the pharmaceuticals and personal care products (PPCPs) which exist in river water, and development of a new water pollution index**

Even small amounts of PPCPs are capable of influencing biological systems; however, investigations into the impacts of environmental PPCP contamination levels on wildlife have only been carried out within the last few years. Our lab focuses on the determination of PPCP concentrations in domestic rivers, and is working on developing a new water pollution index that accounts for these concentrations.



- **Elucidation of affect by human activities to the living things which inhabit an estuary**

Our lab currently analyzes the chemical substances found in rivers, with a particular focus on hazardous chemicals. Data on the chemical composition of river water is compared with data from an associated lab that investigates biological affects of fishes and shellfish collected in the same area. We believe that this collaboration will facilitate a greater understanding of the effects of human activity on the environment.

