

List of Dissertation Abstract (Dissertation Doctor)

Name	Supervisor	Title	Abstract
Suzuki Yoshihiro	Nakai Satoshi	Development of passive sampler with forced airflow function (semi-active sampler) - Modeling of VOC collection based on mass transfer theory and its application -	A new sampler, the semi-active sampler (SAS), was designed, developed, and examined to address the problems of passive air samplers (PAS). The semi-active sampler (SAS), equipped with a forced air flow function for the passive sampler (PAS), was developed based on the mass transfer theory and can be used in environments with a lower airflow than the conventional PAS in collecting toluene, ethylbenzene, and xylene. The SAS can also collect SVOCs (nicotine), which have weak diffusion ability, faster than the PAS by using direct collection materials. Further investigation of more substances is required as a future challenge.
OGAWA Keiko	ANDO Takatoshi	The midwifery training system and the actual practice of midwives with the Home Ministry issued license during the Meiji Period —A comparison between the cases in Tokyo and Kanagawa prefectures—	The major findings of this study concern the education and actual practice of certified midwives with the Home-Ministry issued license during the Meiji period, focused on the examples from Tokyo and Kanagawa Prefectures. In Tokyo Prefecture, nine midwife schools, other than the Tokyo Prefecture Hospital Midwife School, were established. Midwives with a Home-Ministry issued license helped establish and operated two midwife associations in Tokyo Prefecture. Both associations held lecture meetings regularly and their rivalry contributed to their further efforts for professional improvement. The midwife education for certified midwives with the Home-Ministry issued license in Kanagawa Prefecture included insomuch as the use of obstetric instruments. These midwives practiced in many different areas of Kanagawa prefecture, and they played a significant role in protecting the health and lives of mothers and their children.

Imai Noriyasu	Ogata Shinich	Study on the verification of between laboratory reproducibility and the improvement of the test method of the SH test as an <i>in vitro</i> skin sensitization test	<p>There has been an increased demand to eliminate animal experiments and to replace the experiments with alternative tests for assessing the safety of cosmetics. The SH test is an <i>in vitro</i> skin sensitization test that evaluates the protein binding abilities of a test substance. The between-facility reproducibility and validity of SH test have not been performed. Therefore, to verify the transferability and the between-facilities reproducibility of the SH test, we carried out the SH test at three facilities, including the development facility, and evaluated 25 substances. After an initial round of testing, the protocol was refined as follows: i) determine the optimum pH range, ii) change the maximum applicable concentration of water-soluble substances, and iii) define the appropriate dispersion conditions for evaluating hydrophobic substances. These refinements markedly enhanced the between-facility reproducibility for the 25 substances evaluated in this study. Moreover, we successfully improved the operational efficiency and clarity of the final judgment of the SH test by (i) developing a new decision-making system without statistical processing, (ii) changing the statistical method, and (iii) determining the maximum number of repetitions. The improved SH test was verified by comparing it with existing test methods already adopted by the OECD. Those results suggest excellent performance of the improved SH test, with high reproducibility, reliable predictability, and good operational efficiency. The results of this study are expected to improve the reliability of the SH test and promote to apply in companies. I expect that the results of this research will improve the reliability of SH test and promote its use in companies and other organizations, thereby contributing to the spread of alternative methods for animal testing and the formation of a society that does not depend on the sacrifice of laboratory animals.</p>
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Osugi Tomonori	Matsuda Hiroyuki	A study of fish ecology adapted to river flow fluctuations and methods to improve the impact on downstream rivers of flow regulation by dams	<p>River ecosystems are subject to various flow regimes (fluctuations in flow due to runoff), both large and small, such as floods, and the river habitat, which is the foundation of the river backwater structure, is greatly affected by these fluctuations. One of these is the change in foraging behavior of fish during high water. Even the benthic goby, the reef goby, actively forages for aquatic and terrestrial insects that come downstream during periods of high water, as if it were a swimming fish, and stomach filling has been observed to increase. Thus, organisms are adapted to flow fluctuations such as outflows in rivers, and it is suggested that dam construction may reduce the scale and frequency of natural outflows and affect the river ecosystem, such as the foraging behavior of fish adapted to outflows. Dam projects are public works projects that are indispensable for human life, such as flood control and water supply for irrigation. However, it has been believed that the manipulation of river flow regimes alters natural flow fluctuations, and the river ecosystems downstream of dams are greatly affected. In fact, it has been pointed out that the flood control and water utilization functions of dams cause a reduction in the peak flow rate when the water level rises, interruptions in sediment supply, and changes in water quality, and the effects of these environmental changes on the habitat conditions of benthic animals and other riverine organisms have been confirmed. To determine the extent to which the impact of such dam projects is actually manifested, the Ministry of Land, Infrastructure, Transport and Tourism is conducting a census of the river waterfront and monitoring the impact by comparing benthic animals and other organisms upstream and downstream of the dam. However, there is little knowledge on surveys that have identified actual environmental changes in the river downstream of a dam even before the dam is completed. Therefore, in order to understand the actual impact of the dam project on the river</p>
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			<p>environment downstream of the dam, a survey on the actual changes in the environment and benthic animals was conducted continuously from before to after the dam was flooded at the Hinachi Dam located in Nabari City, Mie Prefecture. The results showed that the dam flooding caused environmental changes such as a reduction in the peak flow rate when the water level increased, coarsening of the riverbed due to the cessation of sediment supply, an increase in the amount of plankton in the stream, and a decrease in the amount of organic matter deposited.</p> <p>In 1997, the River Law was revised and "preservation of the river environment" was positioned as one of the objectives of river management, and rivers are required to function as habitats for a variety of organisms. Therefore, dam projects are required to develop dam management methods to preserve river functions that are desirable for living organisms. Therefore, as one of the methods to improve the environment downstream of a dam, which is affected by the dam, flash flooding, in which water is released from the dam to artificially cause flooding and promote the renewal of riverbed materials, has been attracting attention. This method was planned in Japan based on the artificial flood experiment conducted in 1996 at Glen Canyon Dam on the Colorado River in the United States and pulse discharge downstream of dams in Switzerland and other EU countries.</p> <p>In implementing this flash discharge, a study was conducted on the effect of improving the river environment downstream of the dam by securing a part of the flood control capacity for environmental discharge as a device of the current dam operation method, and on the improvement method by elastic management of the dam that releases water to improve the river environment downstream of the dam, such as flash discharge. It was confirmed that the flash discharge swept away silt such as stagnant water and detached attached algae. These results were compiled into a manual</p>
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			<p>for implementing flexible management and flash discharge at dams under the jurisdiction of the Ministry of Land, Infrastructure, Transport, and Tourism (MLIT), which includes a method for studying effective flash discharge and maintenance flow discharge and a survey method for verifying effectiveness. Based on this manual, environmental improvement downstream of dams using flash flood discharge and other methods has been implemented at dams under direct control nationwide. However, the method of improving the river environment downstream of dams using flash flood discharge only addresses the impact of flow regulation, and does not take into account the impact of interception of sediment supply by dams, which is another issue to be addressed. As a future prospect, it is thought that the combination of flash flood discharge and sediment reduction will enable more effective improvement of the river environment downstream of dams. For these methods, we examined the combination method of flash discharge and sediment reduction, and proposed a more effective method of improving the river environment downstream of dams.</p>
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