Session Report:

ENVIRONMENT I

Chairperson: Shinichiro OHGAKI (The University of Tokyo, Japan)
Secretary: Yoshihisa SHIMIZU (Kyoto University, Japan)

Prof. Shinichiro Ohgaki

Dr. Yoshihisa Shimizu

A Paradigm Shift of Urban Waste Water Management for Conserving Freshwater Resource against Eutrophication
by Prof. Saburo Matsui
The Eutrophication of Reservoirs in Taiwan
by Prof. Shang-Lien Lo
Sustainable Development and Road Transport from an Environmental Viewpoint
by Dr. Hirofumi Ohnishi

Prof. Saburo Matsui

Prof. Shang-Lien Lo

Dr. Hirofumi Ohnishi

1. Summary

The session consisted of three papers presented by two Japanese and one Taiwanese authors. Each of the presenters described different aspects of environmental are worthy of major technological and philosophical consideration necessary for sustainable developments. First two presenters described the control strategies for point and non-point sources, which cause the eutrophication problems in many lakes and reservoirs in Asian countries. The third presenter described the relationship of the air quality and the road transport, and discussed the prospects for the improvement measures for the problems.

Prof. Saburo Matsui described a new approach of sewage works with urine diversion, collection and recycle for eutrophication control,

Prof. Shang-Lien Lo discussed the urgent need for an effective non-point source control against eutrophication of reservoirs in Taiwan, and

Dr. Hirofumi Ohnishi explained the current status of air pollution originated from automobile emissions, and future prospects of air quality.

These issues and proposed solutions presented by these authors will require not only innovative engineering developments but also clear understanding by the society. Civil engineers must play various very important roles for the attainment of better environmental quality in future.

2. Presentation Highlights

Matsui discussed a need of paradigm shift of urban wastewater management for constructing "sustainable society." By introducing a new type of sewage works that can accept urine in the separate pipe from other pipe that collects feces and greywater; we may be able to suppress the eutrophication in lakes and reservoirs, to save water for flushing toilet, and to improve the efficiency of current biological nitrogen and phosphorus removal treatment process. The recovery of these inorganic nutrients into chemical fertilizer may also be advantageous for nutrient recycle. Matsui emphasized that these new sewage works with urine diversion can be shared both by developed and developing countries.

Lo explained the necessity of reservoirs in Taiwan to fulfill the demand of water supply and the eutrophication problems in those reservoirs caused by both point and non-point sources. The Taiwanese government has proposed a series of sewage system projects to collect and treat all point source pollutants from the upstream of reservoirs and then to discharge the treated effluent into the downstream reservoirs. For non-point sources, best management practices (BMPs) are advocated. Lo concluded that non-point pollution in Taiwan is as urgently needed as point source control; and efforts should being as soon as possible for basic data collection, testing of control technologies, and formulating an institutional framework for implementation of control strategies.

Ohnishi described two of major environmental issues related to the road transport in Japan: regional air pollution caused by nitrogen oxides and particulate matters, and global warming due to carbon dioxide emissions from automobiles. The former in the urban area has been and will be improved significantly with regulation implementation and engine improvement. The reduction of

CO_2 emissions from the road transport seems to be difficult due to an increase in the total vehicle-kilometers although the fuel consumption efficiency is being improved. Ohnishi also discussed the necessity of various measures related to traffic demand management (TDM) and development of the fuel-cell electric vehicles.

3. Conclusions

The first two presentations were on eutrophication of lakes and reservoirs and the last one on air pollution by automobiles. These seem to be totally different subject. However, on of the important messages was raised repeatedly from them, which is we always need to consider both point and non-point sources for preserving and improving the environmental quality. Another importance is that the necessity of exchange of knowledge and experiences among professionals in Asian countries. This session and conference successfully provides us a very good opportunity to discuss and exchange the idea and technology.

BACK