INDUSTRIAL WATER POLLUTION

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Summary

Industrial operations in a community also may have a major influence on the shape of its wastewater hydrograph. Municipal and industrial wastewaters are especially important point sources of potential pollutants. They frequently contribute major quantities of BOD, suspended matter, bacteria, metals, and many specific chemicals potential of causing a wide variety of problems in watercourses or downstream uses. Qualities of wastewater depend on the industry type of the factories. Wastewater discharged from food industries contains high BOD. From paper industry SS and colored wastewater are discharged. Dyeing industry and pharmaceutical industry may release toxic organic matter. Draining from oil refining industry contains oil content, sulfides, ammonia and phenol etc. In plating industry, dilute or concentrated draining is discharged and both of them include acid, alkali, cyanide, chrome etc. Wastewaters from ships contain BOD and suspended solids might be potential of causing health risk of infectious diseases.

1. Industrial Flows

Industrial operations in a community also may have a major influence on the shape of its wastewater hydrograph. In some instances, large water users operate around the clock, perhaps even 7 days a week. Hydrographs in those systems usually are flatter because the large and continuous industrial flow makes variations in household and other uses have less relative effect on the total flow from the community. Conversely, discharges from large water users that operate for perhaps only 8 hr a day may have the opposite impact on the flow pattern, accentuating daytime peaks.

2. Wastewaters

Municipal and industrial wastewaters are especially important point sources of potential pollutants; in fact, they frequently are viewed by much of the public as being responsible for most or all water pollution problems. They frequently contribute major quantities of oxygen-demanding materials (BOD), suspended matter, bacteria, metals, and many specific chemicals capable of causing a wide variety of problems in watercourses or downstream uses.

Wastewaters from ships and pleasure boats have received special attention in recent years, sometimes with little justification and often without sound judgment. Sanitary wastes from vessels contain oxygen-demanding materials and suspended solids, usually in quantities too small to cause significant problems in the receiving stream, although on rare occasions they conceivably might be capable of causing difficulties in crowded harbors. The principal concern about these wastes has been the potential health risk of transmitting diseases through body contact with water receiving them, through drinking waters, or through the consumption of shellfish and other aquatic life. It has not yet been documented that waterborne diseases actually have been transmitted in this fashion, because of discharges from boats, although the possible route of transmission obviously is there.

Control systems for sanitary and oily discharges from vessels have been implemented at considerable cost. However, they offer special regulatory problems because the thousands of individual boats are widely scattered and frequently on the move, making adequate surveillance through inspection virtually impossible.

Other wastewaters that only recently have been recognized as important are the by-products originating in the treatment of water for municipal and industrial supplies. These waters, mostly ignored for many years, include sludge accumulations in settling basing and wastewater flows from backwashing sand filters. They contain most of the suspended matter and microorganisms in the intake water as well as the chemicals added to facilitate their removal. Some water treatment plants also discharge large quantities of dissolved solids from ion-exchange processes or from other treatment systems needed to produce the required final water quality. Today, discharges from water treatment plants are subject to the same regulatory controls as wastewaters from other industrial operations.

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Bibliography

James C. Lamb (1985), Water quality and its control, John Wiley and Sons, Inc. New York, USA. [This

book describes characters of waste waters and describes matters that require attention in drainage processing.]

Editorial committee of 'Technologies and laws for preventing pollution' (supervised by Industrial science and technology policy and environment bureau, Ministry of economy, trade and industry of Japan) (1995), Technologies and laws for preventing pollution, Japan Environmental Management Association for Industry, Tokyo, Japan. [This shows BOD values from each industrial sewage.]

Editorial committee of 'Manual of water service and draining' (1973), Manual of water service and draining, Maruzen, Inc., Tokyo, Japan. [This describes water treatment and waste water processing.]

Biographical Sketches

Katsuhiko Nakamuro is Professor of Pharmaceutical Sciences at Setsunan University, where he has been at the present post since 1994. He graduated from Gifu Pharmaceutical University and received the Bachelor Degree and the Master Degree in Pharmaceutical Sciences in 1967 and in 1969, respectively. After graduation, he worked for Division of Environmental Chemistry, National Institute of Health Sciences, the Ministry of Health and Welfare of Japan from 1969 to 1984, participating in fundamental research for deciding standard of water quality and establishing measurement method for water quality. In the meantime, he also obtained the Ph.D. in Pharmaceuticals from Gifu Pharmaceutical University in 1977 on studies of environmental toxicology of sodium selenate. He worked for Office of National Environment Board in Thailand as a technical expert and transferred the water quality technology from 1983 to 1984.

Since 1984, he is with the Department of Environmental Health where his research topics cover development of risk-assessment for pollutants in water and evaluating toxicities of environmental chemicals including mutagens in river, disinfection byproducts by chlorination and ozonation, endocrine disrupting chemicals.

He has written many books on health risk of water contaminants. He has been the author or co-author of more than 150 research articles. He was awarded from Japan Water Works Association on his research of formation mechanism of trihalomethane during aqueous chlorination in 1983, and awarded from Japan Society on Water Environment on his research of effect of coexisting metals for trihalomethane formation during water chlorination in 1989. He has served as the official in Japan Society of Water Environment, the Pharmaceutical Society of Japan, Japan Society for Biomedical Research on Trace Elements, Japan Ozone Association, and Japan Research Association for the Medical & Hygienic Use of Ozone.

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