Diffuse pollution: A hidden threat to the water environment of the developing world

This Special Section collects eight articles from the 16th IWA International Conference on Diffuse Pollution and Eutrophication (16th DIPCON), which was held in Beijing on 18 to 23 August, 2013. These articles focus on the diffuse pollution problems encountered in the development process.

Diffuse pollution is usually discharged into water systems by routes other than pipes and mostly occurs during rainfall events. Since the 1980s, this problem has been well documented in industrial countries and has been incorporated into regional pollution control programs. However, in most of the developing countries, the people and government agencies do not know diffuse pollution well. Although people have noticed a decline of water quality after heavy precipitation events and even fish kills in some cases, most people are unaware of the threat of diffuse pollution. In many countries, diffuse pollution is not considered in their environmental monitoring programs. Since rainfall flow discharges are usually not monitored, the diffuse pollution load, which is related to hydrological conditions, is often very much underestimated.

In China, the Ministry of Environmental Protection announced the national environmental status in the 2013 report on the World Environment Day, June 5, 2014. China’s environment is in a critical condition, especially as regards the water and air. In the key national lakes and reservoirs, 27.8% were in eutrophic and 57.4% in mesotrophic status; of 4778 monitoring sites for groundwater, almost 60% were poor or extremely poor; the water quality of drinking water sources and offshore sea water is not good either. There was no evident change in water quality compared to the year before. This is nearly the tenth time to admit “there is no evident change in water quality” in recent years.

It is difficult to explain the above statement given the fact that there has been a great effort mounted to combat point source pollution in the past 10 years. The industrial wastewater treatment rate has increased from 39% in 2003 to 89% in 2013. People want to know why many billions of RMB spent on combating pollution have not produced evident change. According to the discussion in the 16th DIPCON, besides the effects of industrial and urban growth, the lag in diffuse pollution control is probably one important reason for the lack of progress, and another is the big loss of retention capacity due to the disappearance of much ecological space in the watersheds. All these factors counterbalance the efforts of point source pollution reduction and the diffuse pollution, the hidden threat posed by diffuse pollution at present, is becoming more and more significant.

Today, we are in a period in which many developing countries are on a path of rapid economic growth. These countries can learn from the experience of industrial countries and the concepts of Best Management Practices (MBPs) Low Impact development (LID), and Eco-cities will incorporate diffuse pollution programs. They also will need to choose a new development route with low resource consumption.

Diffuse pollution is not only a technological problem; it is also a problem of the way the societies behave. The recycling economy, ecological land planning, reduction of chemicals in all respects and other measures can reduce diffuse pollution and make development more sustainable.

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