

Surveillance study on risk management such as chemicals in sewer

Whole term

2001.4 ~ 2003.3

(Purpose)

The purpose of PRTR survey is to sort out issues encountered by sewage administrators to manage chemical substances centering on PRTR method, summarize the fundamental theory of risk management for chemical substances existing in sewers and develop guidelines for chemical substance management plan.

Moreover, hormone-disruptive chemical substances, belonging to the category of sewage risk management, are considered as well as fact-finding.

(Result)

1) Result of questionnaire conducted for specified facilities

The result of the questionnaire conducted for S city shows that chemical substances with large movement to sewers are straight chain ABS, ethylene glycol and poly(oxyethylene)=alkylether, which is the same result as the city where the survey was conducted in the previous year. There are reports from dentists that there are some movements of glutaraldehyde, not found in the data of the previous year.

2) Review of issues of the PRTR system

Under the current PRTR system, since the amount of inflowing chemical substances to sewers from entities excluded from the requirements (excluded industries and entities whose employees number is less than 21), households and farmlands is not known, there are some chemical substances with more emission from sewers than the movement to sewers. For future proper management of chemical substances, it appears that confirming the movement to sewers from the entities excluded from the PRTR requirements is necessary.

3) Produce fundamental theory of risk management for chemical substances existing in sewers (draft)

It defines the following: importance of the risk management from the view point of basin management; necessity of actions gradually taken; effectiveness of biological assessment methods such as bioassay; and necessity of risk communication to the residents.

4) Guidelines for chemical substance management plan (draft)

It defines the following: management target items; considerations that should be taken into the risk communication to the residents; importance of chemical substance management in accordance with the nature of the region; and case examples of countermeasures against an accidental inflow of a prohibited chemical substance into sewers.

5) Fact finding of hormone-disruptive chemical substances

The concentration of the substances in the inflowing sewage and treated water are observed at two treatment facilities. The result shows that the concentration of most of the substances is less than 75% in the inflowing sewage and less than 90% in the treated water.

The activity of the reduced value of nonyl phenol in sewage treatment facilities decreases gradually through the treatment process. It is confirmed that the value significantly decreases in the treated water after the reaction bath (effluent of the final sedimentation) showing almost identical result as the existing survey. The activity of the reduced value of 17- β estradiol, on the other hand, hardly shows any change in the inflowing sewage and effluent of the early sedimentation, having a half concentration level compared to the existing survey, and the reduction effect in the reaction bath is relatively minor.

With regard to the activity of the burden, there seemed to be some inconsistency around the sediment basin in the beginning. Looking around the reaction bath, on the other hand, it is presumed that for example, there is a possibility that bisphenol A has biodegradation effect and that Di (2-ethylhexyl) Phthalate could be added (internal production) in the reaction bath. However, these tendencies sometimes lack the consistency in the same treatment facility and it appears that it caused by some issues remained in the accuracy of analysis (especially for sludge).

Research funded by Ministry of Land Infrastructure and Transport and Collaborators: Sapporo City, Kawasaki City, Yokohama City, Kitakyushu City, Fujisawa City, Toyota City

Person in charge of study: Tanaka Shuji, Take Toru, Nikaido Etsuo, Tsugura Hiroshi, Shirosaki Ryo, Sugimoto Tsugane, Ichimatsu Yuta

Keywords

Chemical risk management, PRTR, Environmental endocrine disruptor, Environmental hormone