

LCQ8: Improving design of drainage pipes

Following is a question by Dr the Hon Lo Wai-kwok and a written reply by the Secretary for the Environment, Mr Wong Kam-sing, in the Legislative Council today (January 27):

Question:

Recently, there have been a number of confirmed cases of Coronavirus Disease 2019 (COVID-19) in a number of residential buildings. Some experts have pointed out that the path of infection in some cases is suspected to be related to the sewerage system of the buildings concerned. The U-shaped water traps of a number of units of those buildings are dry, causing the water traps to lose their sealing function, and such situation is similar to that of Block E of Amoy Gardens in 2003 in which there were a number of confirmed cases of Severe Acute Respiratory Syndrome. On the other hand, a multidisciplinary team of a local university has obtained sponsorship and support by the Government to conduct sample tests on domestic sewage for the COVID-19 virus. In this connection, will the Government inform this Council:

(1) whether it knows the up-to-date number of residential buildings from which sewage samples have been collected to date by the aforesaid team and, among the samples collected, the number of those that were tested positive for the COVID-19 virus; of the follow-up actions taken by the team in respect of the latter;

(2) whether the Government will consider extending the scope of sample collection to all residential buildings in the territory, so as to help the Government comprehensively assess the situation of the epidemic; if so, of the details; if not, the reasons for that; and

(3) as it has been reported that the Buildings Department will introduce legislative amendments in respect of the design of drainage pipes of newly constructed buildings, including requiring floor U-shaped water traps to adopt a design that will prevent them from drying up, and the use of different main drainage for units on upper and lower floors to reduce the risks of cross-infection of diseases, of the details of the legislative amendments and the legislative timetable?

Reply:

President,

(1) and (2) With the objective to develop an effective methodology for monitoring the spread of COVID-19 virus, the Government in collaboration with the cross-disciplinary team of the University of Hong Kong (HKU) conducts a research study on testing the virus in sewage, and applies it in monitoring the transmission of the virus in local communities and buildings. The

research led by Professor Tong Zhang of the Department of Civil Engineering of HKU is sponsored by the Health and Medical Research Fund under the Food and Health Bureau and supported by the Environmental Bureau with sewerage network analysis and strategic sampling planning by the Environmental Protection Department and technical and operational support on sewage sampling by the Drainage Services Department (DSD). The first stage of the research started in October 2020 with 26 fixed monitoring points set up across the territory at sewage treatment works and sewage pumping stations operated by the DSD as well as some housing estates, with regular samples taken and tested for the gene segments of COVID-19 virus. So far about 700 samples have been collected for analysis.

In response to the fourth wave of COVID-19 epidemic emerging in November 2020, the Government and the research team flexibly adjusted the monitoring plan and collected samples at some housing estates with infected clusters for analysis, with a view to providing supplementary information to complement clinical testing results and assisting relevant Government departments to assess the local epidemic situation. In December 2020, the team first obtained consecutive positive results of the presence of the virus in sewage samples taken from two buildings in Choi Wan (II) Estate, Kowloon, where there had been no confirmed case. The Government immediately ordered compulsory testing for all residents in the two buildings and had successfully located a total of 10 infected cases there. This is the world's first successful case of tracking down COVID-19 infection cases through combined testing of sewage and compulsory testing on residents.

Noting the escalation of confirmed cases at Yau Tsim Mong and Sham Shui Po in January 2021, the Government and the research team further adjusted the monitoring plan and focused sewage testing on the city blocks of these old districts to identify areas with viral presence to facilitate the health protection teams to issue compulsory testing orders and take other follow-up actions. Taking the example of the Jordan area, after many city blocks within the "Jordan specified area" had been tested positive in the period of January 16 to 21, 2021, the Government made reference to the positive sewage test results and their distribution when delineating the "Jordan restricted area" for action from January 23 to 24. As a result, 13 more confirmed cases were identified.

The investigation on sewage testing is still ongoing. In the process, the Government will consider the situation of the epidemic and put focus and resources on buildings and areas with higher risk of virus transmission (such as residential buildings with multiple confirmed cases and the adjoining buildings with more common facilities) for conducting sewage testing, in order to identify hidden infected persons and break the chain of virus transmission as early as possible. Up till now, sewage testing has been conducted for dozens of housing estates and some other dozens of city blocks in the old districts including Yau Ma Tei and Sham Shui Po.

(3) If the drainage system of a building is designed, constructed, erected, altered and repaired in accordance with the extant Buildings Ordinance and its subsidiary regulations, provided that it is properly maintained and the traps of the drainage pipes have sufficient water seals, the drainage system

could ensure hygiene and safety of the building, including effective prevention of gases in the drainage system from entering the premises.

Nevertheless, to keep pace with the times, the Government has started amending the Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations in stages. The first stage of the legislative amendment exercise was completed in 2015, which is mainly to enhance the standards for the provision of sanitary fitments in public places, including increasing the provision of waterclosets in female lavatories in relevant places. The Buildings Department (BD) is preparing the second stage amendment. The main objectives are to replace the prescriptive requirements by performance-based requirements to cater for advancement in building technology and introduce a higher standard for the design of drainage systems of new buildings, for example, an enhanced design of floor drains to prevent water seals of traps from running dry, the requirement of providing a proper distance between the open end of a ventilating pipe on the roof and the window of a building, and the design of drainage pipe that could avoid backflow of sewage to lower floors caused by pressure fluctuation inside the pipes when the upper floors flush the toilet.

The legislative amendments take time to prepare, and we need to take into account situations which may arise from implementation of specific provisions. In order to achieve early implementation of some enhanced design standards of drainage system and to allow the industry sufficient time to familiarise with the enhancements, the BD will consult the industry so as to implement some of the proposed enhanced design standards through the Practice Notes for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) in the near future. The BD will draw on the experience of implementing the PNAP after it comes into effect in preparing the legislative amendments, with a target to submit the second stage amendment to the Legislative Council in the fourth quarter of 2021.