

## LCQ12: Handling waste medicines

Following is a question by Dr the Hon David Lam and a written reply by the Secretary for Environment and Ecology, Mr Tse Chin-wan, in the Legislative Council today (October 18):

Question:

In reply to my question on November 2 last year, the Government indicated that according to the findings of a scientific study on environmental waters, the environmental pollution caused by residual medicines (including antibiotics) was insignificant. However, it has been reported that a study conducted by the Hong Kong Baptist University in 2018 uncovered that leachates collected from the West New Territories Landfill as well as the closed Pillar Point Valley Landfill and Shuen Wan Landfill had been tested and found to contain human antibiotics, and their quantities in some leachates even reached a level that might result in the development of antibiotics-resistant microorganisms, posing public health risks. In this connection, will the Government inform this Council:

(1) whether it has studied the types of antibiotics disposed of at landfills in the past year; if so, of the respective types and quantities of the antibiotics concerned;

(2) of the time and details of the Government's latest assessment of (i) the impact of the disposal of medicines at landfills on the environment and (ii) the impact of the disposal of human antibiotics on antibiotics resistance; whether it can provide the report of the aforesaid scientific study; and

(3) whether it will consider afresh establishing a centralised recovery system for medicine from households/residential care homes to mitigate the threat of human antibiotics to the environment and the ecology; if so, of the details?

Reply:

President,

The consolidated reply to the question raised by Dr the Hon Lam is set out below:

In Hong Kong, antibiotics is a type of prescribed medicines and should be used under close supervision by healthcare professionals. The public must obtain a doctor's prescription for dispensary of antibiotics at pharmacies. In general, doctors/medical practitioners only prescribe antibiotics to patients when necessary after clinical diagnoses, and should provide instructions to patients on the proper use of antibiotics, including the dosage of antibiotics, and the need to take all the dispensed antibiotics to complete the entire course of treatment.

According to the Waste Disposal Ordinance (Cap. 354) (the Ordinance), expired or ineffective antibiotics generated by pharmaceutical suppliers or medical institutions are classified as chemical waste. Their storage, collection, delivery and disposal must comply with the stringent requirements of the Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C). According to the Ordinance, the relevant organisations are required to engage licensed chemical waste collectors to collect and deliver the chemical wastes to the licensed chemical waste disposal facilities for incineration or proper disposal. The Environmental Protection Department (EPD) also issues letters to remind hospitals, clinics and other organisations to properly dispose of waste medicine generated (including antibiotics and other medicines that are expired, ineffective or returned from patients) in accordance with the legislative requirements.

On the other hand, the landfills in operation in Hong Kong were designed and constructed as fully contained facilities with a multi-layer composite impermeable liner system covering the entire base area of the landfills. Waste undergoes anaerobic digestion in the landfill and the leachate arising from decomposition will be fully collected and treated at the leachate treatment facility set up at the landfill, including the use of sequential batch reactors for aerobic digestion. The treated leachate will be discharged into public sewers in accordance with statutory standards. If the leachate contains antibiotics from waste medicine, the majority of which will be decomposed through the anaerobic and aerobic digestion processes mentioned above.

According to the research conducted by the Drainage Services Department, the sewage treatment works in Hong Kong can effectively remove some of the pharmaceutical residues in the sewage (including antibiotics), for which the removal rate of some antibiotics in secondary sewage treatment works can reach 90 per cent or above. These findings are on par with that of relevant overseas research. Therefore, the amount of the residual antibiotics that may be present in the effluent will have been greatly reduced after the aforementioned multiple biological decomposition processes.

The EPD has commissioned a local university to conduct an antibiotics environmental baseline survey study from 2020 to 2021. The findings of the study showed that the median levels of 26 types of antibiotics commonly used in Hong Kong in the aquatic environment were lower than the "Predicted No Effect Concentration (PNEC)", indicating that there was no material impact caused on our local aquatic environment. The link to the report of the aforementioned baseline survey study is as follows: [www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/water/study/rpts/files/Antibiotic\\_report.pdf](http://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/water/study/rpts/files/Antibiotic_report.pdf)

Regarding the suggestion to establish a centralised households / residential care homes medicine recovery system, since the community generally does not discard a large quantity of antibiotics medicine, and the antibiotics commonly used in Hong Kong have no material impact on our local aquatic environment, the EPD currently has no plan to set up any relevant

recovery system.