

LCQ5: Impacts of discarded face masks on the environment and ecology

Following is a question by the Hon Chung Kwok-pan and a reply by the Secretary for the Environment, Mr Wong Kam Sing, in the Legislative Council today (May 20):

Question:

To prevent infection of the Coronavirus Disease 2019, healthcare personnel and members of the public need to always wear face masks. Some environmentalists have pointed out that a large number of face masks are disposed of improperly every day, giving rise to not only risks of virus spreading but also pollution to the environment. In this connection, will the Government inform this Council:

- (1) whether the Environment Bureau (ENB) has compiled statistics on or estimated the accumulated and average quantities of face masks disposed of each day across the territory since the outbreak of the epidemic;
- (2) as some environmentalists have pointed out that anti-virus N95 masks and surgical masks generally contain degradation-resistant materials, and currently a large number of face masks are discarded along with domestic waste in landfills every day, whether the ENB has assessed the impacts of such a situation on the environment and ecology; and
- (3) of the measures adopted by the ENB for handling the pollution to the environment and ecology caused by discarded face masks?

Reply:

President,

It is difficult for us to accurately provide the statistics on how many face masks have been used by Hong Kong's people since the outbreak of the epidemic. However, with an estimated population of about 7.5 million and a labour force of about 4 million in Hong Kong, the amount of disposable face masks used daily could be in the order of millions.

Based on the estimation that around 4 to 6 million face masks are used in Hong Kong daily and each face mask weighs about 2 to 3 grams, the face masks disposed of at landfills every day will weigh some 10 to 15 tonnes. According to the report on Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2018, the amount of municipal solid waste (MSW) disposed of at landfills was 11 400 tonnes per day (tpd). On this basis, it is estimated that disposable face masks discarded during the epidemic will account for about 0.1 per cent of the MSW disposed of at landfills.

Disposable face masks are mainly made of plastic materials, such as non-woven fabrics, filter layers and elastic strings etc., and waste plastics is

the third largest constituent of MSW in Hong Kong. According to the 2018 report mentioned above, the amount of waste plastics disposed of at landfills was about 2 300 tpd. On this basis, it is estimated that disposable face masks discarded during the epidemic will account for about 0.5 per cent of the waste plastics disposed of.

Since disposable face masks, including N95 masks and surgical masks, are made of composite materials of different kinds and metals which are difficult to be separated, they are not suitable for recycling or discarding in recycling bins to avoid contaminating other recyclables. In addition, the Government announced on May 5 that it would distribute reusable masks to citizens of Hong Kong. This can help reduce the use of disposable face masks.

At present, discarded face masks from hospitals and isolation centres handling suspected and confirmed cases will be disposed of as clinical waste by delivering to the Chemical Waste Treatment Centre for incineration at a high temperature of about 1 000 degrees Celsius. All the emissions will be treated by advanced air pollution control equipment to ensure compliance with the stringent emission standards to protect the environment.

As for the face masks used by the general public, they will be mainly collected along with the domestic waste by the refuse collection vehicles and sent to landfills directly or through refuse transfer stations. In the transfer stations, the waste will be conveyed to the purposely-built seal-tight containers via automated conveyor system, and then transported by sea or road to the landfills for disposal. The process of waste handling at the transfer stations is mainly operated by machinery, and the staff at the stations do not need to contact or handle the waste with their hands. The contractors of the transfer stations will regularly clean the waste tipping hall, the floor, the waste conveyor system, and the waste containers and trucks to keep the place clean and hygienic. Wastewater generated from the transfer stations will be properly treated before discharging into the public sewers, and subsequently transported to the government sewage treatment works for further treatment.

The landfill is designed and constructed as an enclosed containment incorporating multilayer composite liner system covering the entire area of the site, and leachate will be collected and properly treated. At the end of the daily operation, the contractor will cover the tipping areas with a layer of approximately 150 mm of soil and cement-based cover material to ensure environmental hygiene and prevent the emission of odour. In addition, the biogas produced in the landfill will be collected by the gas collection system for better use – the generation of energy. Under the enclosed environment in the landfill, the domestic waste will decompose and undergo anaerobic digestion. Thermal energy will be generated during the process and the temperature in the landfill will be increased, which will help kill pathogens, including bacteria and viruses. *E. coli* is often used as a microbial indicator of pathogens. The lower its level, the less likely the pathogens would be present in the environment. We have taken leachate from landfills for testing of *E. coli*, and the test result showed that there is no *E. coli* in the leachate. Therefore, the disposal of face masks in landfills would not result in the spreading of diseases.

During the epidemic, relevant departments will step up their efforts in cleaning up discarded face masks and refuse, and remind their staff to stay vigilant, observe good personal hygiene and dispose of refuse properly. As many members of the public visit country parks in recent days, relevant departments, including the Environmental Protection Department and the Agriculture, Fisheries and Conservation Department (AFCD), have stepped up inspections and cleaning of venues. At the same time, the AFCD has also publicised through different channels, including hanging publicity banners and posting posters in country parks with high visitor flow to urge the visitors to maintain environmental hygiene and protect the ecosystem. AFCD staff will also remind hikers to take their litter home when patrolling the country trails. If littering is found, appropriate enforcement actions will be taken.

In response to the novel coronavirus outbreak, the Government has been constantly reminding members of the public to fight the virus together in the past few months through various channels to maintain strict personal hygiene and appropriate social distance with others at all times, and make proper use of personal protective equipment (such as face masks). Used personal protective equipment should be properly discarded in lidded rubbish bins and must not be littered elsewhere to avoid causing health risk and adversely affecting the ecosystem.

Thank you, President.