

# Can Covid enter your house from a sick person's toilet downstairs?

**It is not the biggest cause of infections, but the spread of Covid through common sewage pipes in apartment blocks cannot be ruled out**

[ABHILASH.GAUR@TIMESGROUP.COM](mailto:ABHILASH.GAUR@TIMESGROUP.COM)

Last year, scientists thought the Covid virus behaved like water from a spray bottle. It would fly a few feet and fall down. Now they say it's more like deo — you spritz at one end and it fills up the whole room.

A virus that hangs in the air will also travel with the flow of air. If there's a patient isolating in one room of the house, and the electric chimney is on in the kitchen, the virus will creep into the kitchen.

Does it mean people living close together in apartments are at risk from each other, even when they are isolating? So far, we have not heard of the virus jumping across balconies and going around the doors and walls of adjacent houses, but there is one way it can possibly spread from a patient to their neighbours — the toilet.

## More than a gut feeling

Diarrhoea is a common symptom of Covid and the virus's RNA or genetic code is found in patients' stools. If the virus in faeces is alive and infectious, what happens when a patient presses down on the flush lever?

“...the churning and bubbling of water aerosolises faecal matter,” Joseph G Allen, director of the Healthy Buildings programme at Harvard University's T.H. Chan School of Public Health, wrote in a Washington Post article.

Allen estimated that flushing would release “upwards of 1 million additional particles (not all viruses) per cubic metre of air.” If it were an office toilet, or one in a restaurant, the risk to the later users would be clear, but how can this cloud of faecal matter and germs infect other residents of a building?

## The Amoy Gardens case

Amoy Gardens is a 50-storey housing complex in Hong Kong. In the 2003 SARS pandemic — which was caused by a virus of the same family as the Covid virus — 342 residents fell ill and 42 died. Scientists believe the virus spread among residents through the plumbing system. Here's what happened.

On March 14, 2003, a SARS patient came to Amoy Gardens' building E. He visited an apartment on one of the middle floors and used the toilet because he had diarrhoea. He visited the apartment again and used the toilet on March 19.

Shortly after this, an explosion of cases occurred in the complex. An article in the New England Journal of Medicine says 99 of the 187 initial patients were in building E. But it is interesting that most cases occurred above the first patient's house. Also, "members of the management and security staff... who worked on the ground floor... 24 hours a day... were not affected by the virus."

## **Covid and plumbing**

In several cases, shared plumbing is also suspected to have spread Covid between apartments. Jocelyn Kaiser of Science Magazine writes about a Guangzhou highrise where a family of five on the 15th floor came down with Covid after visiting Wuhan. A few days later, two couples on the 25th and 27th floors — in a straight line above the 15th-floor apartment — also had Covid. They had not moved out during China's strict lockdown.

To test their theory about the role of plumbing in spreading infection, Chinese scientists released a tracer gas (a gas that would usually not be present in a house) into the 15th floor apartment's drainpipe and found it "exited in the 25th and 27th-floor apartment bathrooms."

## **Need to be careful now**

This does not mean that bathroom pipes in apartment buildings are the main source of Covid infection in cities. For the virus to spread through a patient's stool, the 'viral load' has to be very high. In the Guangzhou building, all five members of the 15th-floor family were sick at the same time. The virus buildup in their toilet must have been enormous.

Similar conditions might exist in Indian apartment complexes now when so many residents have Covid and are self-isolating. As a Lancet article points

out: “High concentrations of infected people contribute to a higher viral load in the system.”



**DON'T LET BATHROOM DRAINS DRY OUT**

Drainpipes have a U-shaped bend that holds water and stops sewer gases from entering your house. When this bend or trap dries out, your bathroom smells like rotten eggs. The 2003 SARS outbreak in Amoy Gardens in Hong Kong occurred because the drain traps of many apartments were dry. Foul air and germs from the lower floors were able to creep in

**If you live in an apartment building, the first thing to do – to keep the Covid virus out – is to pour water into all the traps, including those on the bathroom floor. Other than that:**

- Never ignore a foul smell in the bathroom, as it can indicate an air leak
- Keep the toilet lid down when you flush. That way, if you have Covid, a virus cloud won't seep into your neighbours' homes through dry drains or windows
- Ventilate the toilet well with a window or exhaust fan
- Clean all bathroom surfaces regularly