Mold appeared in the "Earth Chamber" more than a year after it was put into use. After experts evaluated the building, they believed that condensation and rain were the main causes of the mold problem in the building, and had nothing to do with the main material of the building, wood.

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Asia's largest expert on wood-structure mold: Rainwater and condensation are the cause and have nothing to do with wood

Singapore

(Singapore, 28th) More than a year after the opening of the Gaia, the largest wooden structure in Asia at Nanyang Technological University in Singapore, the mottled and moldy exterior walls have attracted attention. After evaluating the building this week, two independent experts concluded that rainwater and condensation were the main causes of mold in the building, and had nothing to do with the main building material, wood.

The Earth Room, which covers an area of 43,500 square metres, was opened in May last year and cost S$125 million (RM418.747 million) to build. The six-storey building uses Mass Engineered Timber (MET), a laminated timber with a lower carbon footprint, and is an innovative green building at NTU.

In a statement today, NTU said an independent external expert assessment concluded that the laminated wood used in the Earth Room would not itself encourage mould growth as it met certification standards and had been treated with a protective sealant.

The two experts are from the School of Design and Engineering at the National University of Singapore, who are not involved in the Earth Room project. They are Associate Professor Tan Guowei from the Department of Built Environment at the National University of Singapore, and Associate Professor Shinya Okuda from the Department of Architecture at the National University of Singapore.

Indoor air quality expert Tan Guowei said the mass engineered wood used in the building would not contribute to mold growth because the wood met certified regulatory standards and was treated with a protective sealant.

Associate Professor Shinya Okuda, an award-winning architect who specializes in building with wood, agrees, saying that the external timber cladding of the Earth Room developed mould due to direct exposure to rain, but sanding tests showed that the mould had not penetrated the timber structure.

According to the statement, the mold was mostly concentrated inside and on the exterior walls of some offices in the Earth Room.

NTU said indoor mold mainly appears on air-conditioning vents and some furniture surfaces, and is caused by condensation. When moist air from outside comes into contact with cooler surfaces indoors, such as when office doors and windows are left open for a long time, condensation occurs, which in turn encourages mold growth.

As for the mold on the exterior walls, it was because the wood was directly exposed to rainwater. But Okuda Shinya said that according to his inspection, the mold had not penetrated into the wooden structure.

Experts say that to mitigate mold growth in the long term, specific measures must be taken, including maintaining a dry environment, reducing condensation, and generally limiting direct contact with rainwater.

NTU said it will adopt and implement the improvement suggestions made by independent experts. For example, in the next three weeks, chemical cleaning and mold testing will be carried out on rooms and areas affected by mold. The school will also wipe the air-conditioning vents in all rooms every day.

The school also regularly inspects, cleans and maintains the building's interior and exterior surfaces, including structural supports. Any visible cracks in wood surfaces are repaired and resealed to prevent moisture infiltration and mold growth.

The mold issue also raises health concerns. NTU's respiratory disease and immunology experts said that people with normal immune systems and good health are unlikely to get sick from mold exposure; those at higher risk are those with underlying lung diseases or allergies, including asthma.

NTU plans to start the air-conditioning system in the morning before classes and work to help ventilate and dehumidify the room and reduce possible odors.

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