

SINGAPORE

# Singapore’s NTU Gaia building mould issue: Condensation and rain exposure the culprits, not timber, say experts



The interior of Gaia and its skylight. Associate professor Tham Kwok Wai, an expert in Indoor Air Quality, and associate professor Shinya Okuda, an award-winning architect specialising in timber, both assessed Gaia and confirmed that the timber itself did not cause the mould growth. They identified that condensation and rain were the primary factors, a statement issued by NTU said yesterday. — Picture courtesy of NTU Singapore

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By Malay Mail

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KUALA LUMPUR, Aug 29 — A recent mould issue at the S\$125 million (RM421 million) Gaia building, constructed from Mass Engineered Timber (MET) and located at Nanyang Technological University (NTU) Singapore, has been attributed to condensation and rain exposure, rather than the timber used, according to two independent experts.


Associate professor Tham Kwok Wai, an expert in Indoor Air Quality, and associate professor Shinya Okuda, an award-winning architect specialising in timber, both assessed Gaia and confirmed that the timber itself did not cause the mould growth.

They identified that condensation and rain were the primary factors, a statement issued by NTU said yesterday.

“Moulds are the longest surviving and thriving biological species with millions of years of survival instincts. They will sporate more when they are under threat. For example, opening windows will cause them to grow faster as they detect a change in temperature and feel threatened,” said Tham.

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The mould was primarily found on air-conditioning grilles and furniture surfaces in affected rooms, which experienced condensation when humid air made contact with cooler indoor surfaces.

Assoc Prof Okuda noted that while timber is prone to mould under high humidity and rain exposure, the MET used in Gaia was treated with protective sealants to reduce porosity.

He stressed that periodic maintenance is essential to mitigate mould growth.

“Mould growth can occur under consistently high relative humidity, prolonged rain exposure, or condensation in tropical environments. More porous surfaces are prone to mould growth, regardless of material — timber or concrete — if untreated. The timber elements of Gaia are coated to reduce porosity, which should help mitigate mould growth. However, coatings generally require periodic maintenance.”

The mould growth on the exterior timber cladding was specifically due to rain exposure, but trial sanding showed no penetration into the timber structure. Long-term prevention would require maintaining a drier environment and reducing condensation, Okuda added.

NTU has accepted and plans to implement the sustainable maintenance approaches recommended by the experts.

The university’s chief development & facilities management officer, Siew Hoong Kit, emphasised NTU’s commitment to ensuring a safe environment for its community.

Immediate remediation measures have been initiated, including daily cleaning, periodic maintenance, and mould remediation efforts.

Affected rooms will undergo chemical cleaning and mould testing over the next three weeks. Air-conditioning grilles, which are prone to condensation, will be wiped daily, and low airflow areas will be cleaned monthly.

To prevent moisture penetration, visible cracks in wood surfaces will be patched and resealed. NTU also plans to activate the air conditioning system ahead of working hours to help ventilate rooms, reduce odours, and ensure comfort.

Experts in respiratory health noted that while healthy individuals are unlikely to experience issues with mould exposure, those with underlying conditions or compromised immune systems may be at higher risk.

The university plans to carefully calibrate these adjustments to maintain sustainable energy consumption.

“We will learn from these challenges and share our learning and best practices as more buildings are constructed using MET in Singapore and other parts of the tropics,” said Siew.

**Malay Mail had reported** on August 17 that the Gaia building, a massive wooden structure at Singapore’s NTU, and hailed as a green and beautiful architectural marvel when it opened last year had experienced problems with mould growth on its wooden exterior just over a year after its opening, much to the alarm and concern of staff and students about the health risks associated with the mould.

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