

DID THE EARTH MOVE FOR YOU? A WHOLE NEW MEANING!

Maybe big isn't better!

Have you noticed how experts today continually either preach gloom and doom about things we've done for years...or try to convince us that things that any idiot can see are possibly not a "good thing", are the next best thing to J-Lo in a thong?

Now they seem to have dropped another bouncy pair.

Standing 508 metres (1,667ft) high, Taipei 101 in Taiwan is the world's tallest building, and at 700,000 tons, it must be among the heaviest.

Now geologists fear that its size and weight may have transformed a stable area into one susceptible to earthquake activity.

The Taiwan skyscraper has raised unexpected concerns that may have far-reaching implications for the construction of other buildings and man-made megastructures.

Taipei 101 is thought to have triggered two recent earthquakes because of the stress that it exerts on the ground beneath it.

According to the geologist Cheng Horng Lin, from the National Taiwan Normal University, the stress from the skyscraper may have reopened an ancient earthquake fault.

If he is right, then it raises concerns about proposals such as Sky City 1000 in Japan, the vertical city that has been proposed to solve Tokyo's housing problems.

And it is not just skyscrapers that are a problem.

Dams and underground waste deposits may also cause rumblings if they become too large.

Before the construction of Taipei 101, the Taipei basin was a very stable area with no active earthquake faults at the surface.

Its earthquake activity was similar to parts of the UK, with micro-earthquakes (less than magnitude 2) happening about once a year.

However, once Taipei 101 started to rise from the ground, things changed.

"The number of earthquakes increased to around two micro-earthquakes per year during the construc-

tion period from 1997 to 2003.

"Since the construction finished there have been two larger earthquakes (magnitude 3.8 and 3.2) directly beneath Taipei 101, which were big enough to feel," says Dr Lin.

Using the construction information, Dr Lin has calculated how much pressure Taipei 101 exerts on the ground.

The weight of steel and concrete came to more than 700,000 tonnes spread over an area of 15,081 square metres, 3.7 acres, meaning that it exerts a huge pressure on the ground below.

"The construction of Taipei 101 is totally different to many other high-rise buildings because it used component structures made of both concrete and steel, to give it added protection from earthquakes and fire. Therefore it has a huge vertical loading on its foundation," says Dr Lin.

And it is this exceptional downward stress that Dr Lin thinks may have caused the extra earthquakes.

"I think that the considerable stress might be transferred into the upper crust due to the extremely soft sedimentary rocks beneath the Taipei basin. Deeper down this may have

Closer to home, the magnitude 5 earthquake in May 2001 in the North Sea is thought to have been caused by a release in pressure from oil and gas extraction

reopened an old earthquake fault," suggests Dr Lin.

Other experts are more cautious about blaming the skyscraper for the earthquakes.

"A building will change the stress on the ground under the building, but this probably won't reach down to around 10km, the level where the earthquakes occurred," says John Vidale, an earthquake expert at the University of California in Los Angeles.

It is well known that man can induce earthquakes from things like mining, building reservoirs and extracting oil and gas, where a large load acts over a large area.



One example is the Koyna Dam earthquake, which occurred in 1967.

More than 120 people died and many more were injured when a magnitude 6.5 earthquake shook the ground around the recently constructed dam in Maharashtra state, India.

It is thought that the huge weight of water changed the stresses in the ground.

In 1967, mountains of waste that had been injected into the Rocky Mountains set off a magnitude 5.5 earthquake under Denver in Colorado.

AND THE OZONE LAYER?

The idea of reducing global warming by locking up carbon dioxide in holes underground, will be pointless if earthquakes let all the carbon dioxide escape.

Huge amounts of carbon dioxide fluid are going to be put in large cavities and earthquakes are a real concern,

Anything that can destabilise the geology of the earth should be avoided

Less of a concern is nuclear waste, it's more likely to be put in small tunnels rather than huge cavities.

TAIPEI 101

is an acronym for...

Technology, Art, Innovation, People, Environment, and Identity.

At 101 storeys, 508 metres, it by far the tallest building in the world.

A round trip in one of its super fast lifts takes only 3.5 minutes.

Located in the posh Hsinyi district, it houses stylish fashion boutiques such as Jean Paul Gautier, Ralph Lauren, Lagerfeld, and other big names.

It boasts many fine restaurants and offices for major companies and local banking and financial firms and even houses the Taiwan Stock Exchange.

Other amenities include a modern health centre and an executive club and over 1800 parking spaces.

The view from its observation tower is spectacular, unmatched anywhere in the world.

