

Was the Mir space station being eaten by a mysterious fungus?

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Dear Cecil:

I've heard that the Mir space station was being consumed by a mysterious steel- and plastic-eating space fungus and that this was why whole sections of it were closed off. Is there any truth to this? If so, does this mean, now that Mir has reentered the atmosphere, that the Earth has been exposed to this plague from space?

— Jay Vollmer

It's worse than you think. We're not just talking about metal-eating space fungus--we're talking, potentially, about mutant metal-eating space fungus. Some see in this a cautionary tale about the bizarre dangers awaiting us in outer space. I see the inevitable result of letting unescorted males run a space station for 14 years. What's the story, comrades--you never clean out the fridge?

The fungal infestation came to light in 1988, when Mir inhabitants noticed that a porthole was obscured by what one alarmist described as "an unknown film that was spreading like some horror-movie scum." Closer examination revealed green-and-black encrustations behind control panels, inside air ducts, and in other nooks and crannies throughout the spacecraft. The stuff didn't literally eat metal and plastic but did give off corrosive chemicals such as acetic acid. Acetic acid is basically vinegar, so one doesn't want to become unnecessarily alarmed. Still, the acid pitted Mir's titanium, plastic, and glass, suggesting that the spacecraft's structural integrity might be threatened if the fungus were left unchecked.

The fungus was no exotic invader from space but ordinary terrestrial organisms brought up by visitors from earth. It wasn't the first infestation found aboard a spacecraft, either--fungus had been found earlier on the Salyut space stations. Samples from Mir were brought back down for testing, and eventually more than a hundred species of fungus were identified, the most common being *Penicillium chrysogenum*. The smart thing to do at this point would have been to send in a couple babushkas (dirtophobic Russian grandmothers) and ten liters of Mr. Clean. But no. While space program bosses did ship up disinfectant, administration was left to the (male) cosmonauts, with predictable results: the fungus was kept under control but never eradicated. Visitors to Mir often commented on the odor of mildew that pervaded the place.

Meanwhile, back on the ground, biologists began to fret that even worse things could happen. Since the space station's exposure to cosmic radiation was 500 times more intense than what we experience on Earth, the fungus might mutate into something more virulent. People began envisioning blobs of protoplasm asphyxiating the cosmonauts as they slept. It never got that bad, of course. The main problem from a practical standpoint was that the fungus oxidized electrical contacts, which in at least one case caused a communications device to malfunction. There's no evidence that the fungus actually mutated (although some scientists noted an unusual aggressiveness). Nor did it make anybody sick or cause other severe problems.

Last year Russian space expert Yuri Karash raised one last specter of doom: the fungus might survive the heat of Mir's reentry and infect the earth! This doesn't seem to have been taken too seriously, and I haven't

seen any reports of dire consequences since pieces of the dilapidated spacecraft crashed into the Pacific last March. But it's been only a few months.

Fungus was hardly the worst of Mir's many problems. Whatever one may think of male housekeeping practices, some fungal infestation seems inevitable in a spacecraft occupied for long periods. Keeping the stuff from being carried aboard is close to impossible, and it can live on nothing more than flaked-off skin. Even fumigating the spacecraft with toxic gas won't kill it all.

When the International Space Station was launched, scientists took what precautions they could. All shipments to the station are disinfected, astronauts periodically clean everything thoroughly, the humidity is strictly controlled, high-efficiency filters purify the air, and so on. But I bet when they look between the tiles in the shower stalls they still find that black crud.

— Cecil Adams