Often seen as a friend when it helps stop a toilet line leak, it is one of a plumber's best friends. However**,** **Teflon tape** can also be a deadly enemy. Many are not aware (Lack of Awareness #23 May 2017 issue) just how dangerous using it can be. If you look at the picture in the top/right corner of the cartoon you see a tiny piece of Teflon tape and an underwater Navajo in the bottom right of the small picture.

The story starts with an AME changing an oil line and fitting on the turbocharger controller on the left engine of that sunk aircraft. It had been weeping but he did NOT use Teflon tape on this installation. Someone else had likely used the tape to successfully stop a leak. What he did not notice on the later installation was the small pieces of that Teflon tape left down in the turbocharger controller threads. They are almost translucent and hidden in the bottom of the threads. As he installed the new fitting into the controller, it pushed those tiny pieces of Teflon into the controller. Being beyond the filter, they lie in wait to clog a vital orifice in the system at the worst possible moment.

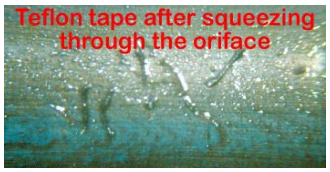
The accident aircraft, a Piper Navajo, was used by a company to fly loggers in and out of a remote logging camp. This particular logging camp had a 3,000 ft gravel airstrip located along the side of a river in the mountains. The mountains rose steeply on each side of this river making it a fly in up river to land and out down river to take off. There was no going around and once the pilot started up the river, he was committed to land. The regulatory body approved the landing strip on the condition that the pilot was in communication with a qualified person at the strip who would assure the pilot that the weather and the strip were clear for a landing. This was not a particularly dangerous maneuver, but there was no margin for error. The flights were VFR only and used a single pilot as permitted by the regulations. The day of the accident was not ideal, but within VFR limits, and the pilot flew in without a problem. He unloaded the crew who were in for a two week stay and loaded the lucky crew going home.

Take off downstream was normal but he had no sooner retracted the landing gear when the left engine manifold pressure dropped from 42 inches take off boost to 28 inches. The heavily loaded aircraft swung violently to the left to face a mountain side seconds ahead. With full right rudder and aileron they brushed past the trees as he hurriedly cranked in rudder and aileron trim in the narrow space now just over the river. Suddenly the left engine went from 28 inches up past 42 inches of boost to something like 52 inches, swinging the aircraft to now face the mountain on the other side of the river. His left foot quickly pushed the rudder to the floor, but as he cranked in left aileron the trees seemed to be right in front of him. In his exact words he told me: "*I didn't know what was going on, but I knew that we were going to die if this kept up".* He pulled both throttles to idle and dropped the aircraft into the waiting river just under them.

One logger failed to exit the sinking aircraft in time and drowned.

The turbocharger controller is fail-safed to open via a spring to dump all the exhaust overboard via the wastegate, so as not to over boost the engine in the event of the failure of the oil control supply to counteract it. The oil supply counteracts the spring through an orifice and a controller.

One or more pieces of Teflon tape managed to suddenly block the orifice, causing the wastegate to go to full fail-safe open. This dropped the manifold pressure to 28 inches resulting in a significant loss of power. However the Teflon squeezed through and the controller now dumped full oil pressure from the controller to the waste-gate actuator resulting in a brief over-boost as the controller moved to restore normal boost. In that brief over-boost time period, the pilot, now in an emotional near panic condition, made the subconscious (Child) decision to chop all power and drop the aircraft into the water. If he had had more time to make a rational decision, all he had to do was pull the power back on the left engine only until he could readjust the trim. Unfortunately, one person would pay the ultimate price for this human error.



First time this had happened? Unfortunately not. During my years with a major airline I recall an incident that cost the company over ¼ million 1970s dollars. The culprit again was the arch villain of aviation, Teflon tape. I worked on the ramp at that time and refueled one of our 747s to full capacity of 50,000 gallons for a flight to Hong Kong. After doing the pushback we had a bit of spare time before the next flight when all of a sudden a crew member came running in to say that the 47 was coming back. We went back out to see it do a fly-past with all the gear down. It had just finished dumping thousands of gallons of fuel somewhere and after the fly-past it made a circuit and landed with every fire truck at the airport chasing it down the runway. We guided it back into the gate and were told that one of the main gear had failed to retract after take off. The passengers were off loaded and the aircraft was towed to the hangar. There, they placed it on jacks and did a series of successful retraction tests. All hydraulic filters were changed and the aircraft was returned to the gate for refueling and loading of what were likely some now nervous passengers. While I wasn't there, I suspect that everyone was watching this takeoff where, once again Murphy's law prevailed and one of the main gear again failed to retract. Once more, the city of Vancouver would be treated to a JP4 bath and the usual fanfare of fire trucks would be part of the arrival reception party. The aircraft was once more towed to the hangar with the orders to do whatever you have to do, but this must NOT happen again. While the 300 plus passengers slept compliments of the airline, every component in the landing gear system was replaced in time for a morning departure. A lot less passengers boarded the aircraft with the hope of 3rd time lucky.

Our crew did not depart the aircraft, but we and likely everyone at the airport watched as it climbed out and all the gear retracted as normal. So the problem had to be in the pile of components on the component overhaul shop floor. Under the watch eye of the quality control inspectors, each component was disassembled. One of the main gear door sequence valves finally revealed the source of the problem. As you would have guessed by now, it was a small piece of Teflon tape that was floating around in it. They say that they went through every tool box in the hangar looking for that roll of tape. Thank goodness I had taken it home – just kidding. Teflon tape can be a silent killer. It can

wait a long time and strike when you least expect it. Don’t use it on any aircraft component or it could be you who contributes to what can be a costly human error.