

One More Reason to Quit Smoking

by Jon Vara

If you've ever read the fine print on the owner's manual that comes with a new water heater, you may have noticed a paragraph that says something like this:

WARNING! Hydrogen gas can be produced in a hot water system served by a water heater that has not been used for several weeks or more. **HYDROGEN GAS IS EXTREMELY FLAMMABLE.** To reduce the risk of injury under these conditions, the kitchen hot water faucet should be opened for several minutes before any electrical appliance connected to the hot water system is used. The presence of hydrogen may be indicated by the sound of escaping gas as the water begins to flow. **DO NOT SMOKE OR USE OPEN FLAME NEAR THE FAUCET AT THIS TIME.**

You may have wondered if that's a purely theoretical danger, or if such kitchen-sink reenactments of the Hindenburg disaster really happen.

It turns out that they do. The photo at right shows the aftermath of an accident at a U.S. Navy facility in Key West, Florida, where a base housing inspector had been performing a routine inspection of an unoccupied housing unit. Minutes after she turned on the water in the kitchen sink and started the dishwasher, the machine exploded, blew across the kitchen floor, and bounced off the opposite wall, breaking the dead-bolt on the back door.

"It's a good thing she'd gone upstairs by then," says Occupational Safety and Health Manager Ron Cook, who wrote an account of the incident for the Naval Safety Center publication *Ashore*. "If she was standing nearby, it could have killed her."

An investigation confirmed that the explosion was



Hydrogen, oxygen, and a dishwasher can be an explosive combination.

caused by a pocket of hydrogen gas that had accumulated in the top of the water heater before flowing into the dishwasher, where it was apparently ignited by a timer or starter relay.

"Ultimately, the hydrogen comes from the electrolytic breakdown of water into hydrogen and oxygen," explains plumbing engineer Julius Balanco. "But it's really a freak event. It's almost impossible to say why it happens in some systems and not in others."

Fortunately, such accidents are as rare as they are mysterious.

