

Cold Comfort in Accident Reports

Antihistamines used by pilots for relief from colds or allergies were associated with 338 fatal U.S. civil aviation accidents in a 16-year period.

BY RICK DARBY

There was an increasing trend in the use of a certain class of antihistamines — which can cause sedation and impair cognitive function — among U.S. civil aviation pilots killed in accidents during the 1990–2005 period, according to a new study.¹ Ninety percent of the accidents occurred in general aviation operations, and the analysis suggests that pilots have disregarded warnings.

Antihistamines, usually consumed in the form of tablets or capsules, are drugs used to alleviate symptoms of allergy and the common cold. They are typically sold “over the counter” as nonprescription medicines, but some formulations are marketed as prescription drugs. “The first-generation antihistamines have been reported to be associated with significant sleepiness and impaired performance on flight tasks, resulting in slowed reaction times, memory difficulties and impaired vigilance,” the report says.

The study considered the presence of 13 of the most commonly used first-generation antihistamines known as H₁ receptor antagonists

— hereafter called, for simplicity, antihistamines — in the remains of pilots in fatal accidents.² The researchers examined the U.S. Federal Aviation Administration Civil Aerospace Medical Institute (CAMI) Toxicology Database for reports indicating the association of antihistamines, sometimes combined with other drugs or alcohol, with pilot fatalities during the 16-year study period. Only the records for pilots-in-command — no copilots or first officers — were studied.

Of 5,281 fatal accidents from which results of a post-mortem examination were recorded in the database, there were 338 accidents in which the pilots’ remains indicated the presence of antihistamines. Of the 338 accidents, 304 (90 percent) were general aviation accidents.³ Table 1 shows the breakdown according to operational type.

Of those 338 pilots who tested positive for antihistamines, the certificates held included 175 private pilot, 88 commercial, 48 airline transport pilot, 20 student, and one non-U.S. type; six were non-certificated. Among the 88 commercial pilots, 72 were conducting general aviation

Operational Category Distribution

Fatal U.S. Civil Aviation Accidents Reported in CAMI Toxicology Database, 1990–2005

Operational Category	Aviation Accidents	Pilot Fatalities	Antihistamine-Related Pilot Fatalities
General aviation (FARs Part 91)	4,734	4,655	304
Air taxi and commuter (FARs Part 135)	271	265	15
Air carrier (FARs Part 121)	27	20	1
Agricultural (FARs Part 137)	157	157	8
Rotorcraft (FARs Part 133)	30	29	2
Ultralight vehicle (FARs Part 103)	47	47	4
Public use	69	66	2
Other categories	48	42	2
Total	5,383	5,281	338

CAMI = U.S. Federal Aviation Administration Civil Aerospace Medical Institute FARs = U.S. Federal Aviation Regulations

Notes: Includes fatal accidents of registered and unregistered aircraft from which post-mortem biological samples were submitted for toxicological evaluation.

Because only toxicological results of the pilot-in-command were considered in each accident, the number of antihistamine-related pilot fatalities equals the number of accidents.

Source: U.S. Federal Aviation Administration

Table 1

operations, five air taxi and commuter operations, seven agricultural operations, one helicopter operation, two public use operations, and one was classified “other.” Among the 48 airline transport pilots, 35 were conducting general aviation operations, 10 air taxi and commuter operations, one air carrier operation, one agricultural operation, and one helicopter operation.

Thirty-five of the 338 pilots held first-class medical certificates, 107 second-class medical certificates and 182 third-class medical certificates. The other pilots did not have medical certificates.

Of the 338 pilots, 94 had consumed only one antihistamine, but 244 tested positive for at least two types of antihistamine, other drugs, alcohol or a combination of those substances (Table 2, page 52). Other drugs identified by the toxicology reports included amphetamines, analgesics (narcotic and non-narcotic), antidepressants, barbiturates, benzodiazepines, cardiovascular medicines, cocaine and several others.

“The use of the antihistamine(s) by pilots was determined to be the probable cause or a contributing factor in 63 of the 338 accidents,” the report says. “There were 13 accidents in

which the use of antihistamine(s) was determined to be the cause of the accidents. In one pilot fatality [among the 63], only one antihistamine was found. However, other drugs and/or ethanol [alcohol] were also present in 12 fatalities. Of these, five had two antihistamines and one had three antihistamines.

“In 50 accidents, the use of antihistamine(s) was determined to be a contributing factor. This group of accidents entailed seven fatalities in which only one antihistamine was found.”

The antihistamine-involved pilot fatalities as a percentage of total pilot fatalities during the 16-year period “clearly suggested a steady increase in the number of fatalities with these medications,” the report says (Figure 1, page 52). “For example, the antihistamine-associated fatalities/aviation accidents were approximately 4 [percent] and 11 percent in 1990 and 2004, respectively.” The difference in the percentages of antihistamine-associated accidents by years was statistically significant ($p < 0.001$).

“Pilots are not only cautioned for the medical conditions that might interfere with flight safety, but also against the potential impact of some

“The use of the antihistamine(s) by pilots was determined to be the probable cause or a contributing factor in 63 of the 338 accidents.”

Double Trouble

Antihistamines and Other Substances Involved in 338 Fatal U.S. Civil Aviation Accidents, CAMI Toxicology Database, 1990–2005

Substance(s)	Pilot Fatalities
One antihistamine	94
Two antihistamines	9
One antihistamine plus drugs and/or alcohol	209
Two antihistamines plus drugs and/or alcohol	25
Three antihistamines plus drugs and/or alcohol	1
Total	338

CAMI = U.S. Federal Aviation Administration Civil Aerospace Medical Institute

Note: Includes only pilots-in-command, tested post-mortem.

Source: U.S. Federal Aviation Administration

Table 2

drugs, even when pilots feel better by taking them,” the report says. “Among these drugs, the most important are the ones that alter CNS [central nervous system] functions. Although [antihistamines] are not CNS-specific drugs, as such, they have major side effects on the CNS. Because of this very reason, the package labeling of these medications contains precautionary statements,

warning users against activities involving motor skills, such as operating a vehicle or machinery. However, patients — including aviators — do not appear to take these warnings seriously.” ●

Notes

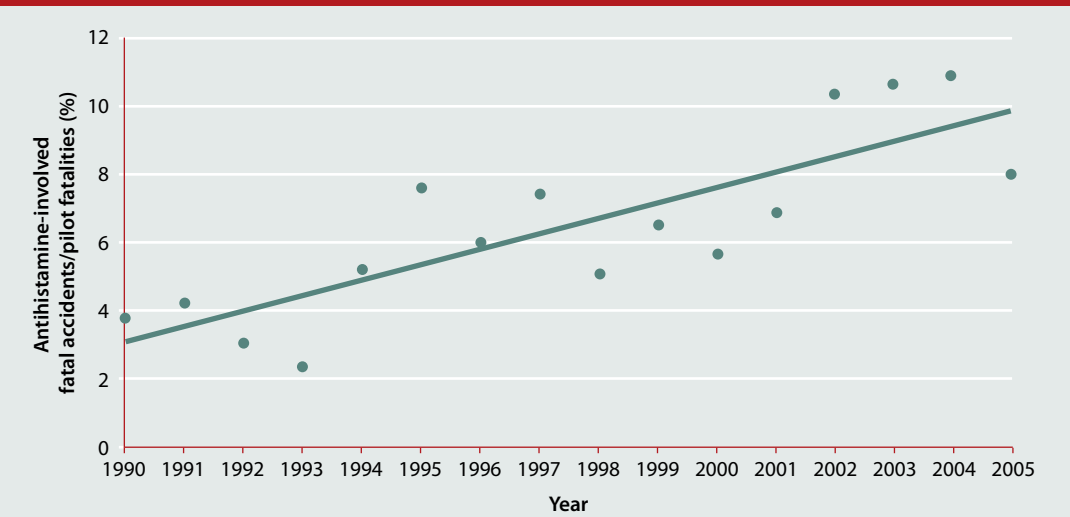
1. U.S. Federal Aviation Administration Office of Aerospace Medicine, Civil Aerospace Medical Institute. “First-Generation H₁ Antihistamines Found in Pilot Fatalities of Civil Aviation Accidents, 1990–2005.” DOT/FAA/AM-07/12. May 2007.
2. Another class of antihistamines, known as second-generation H₁ antagonists, is considered to cause no sedative effect or cognitive impairment. Some of the second-generation drugs are approved by aeromedical authorities.
3. Because the data were accident-dependent, no conclusions can be drawn about how frequently antihistamines were used by pilots in general aviation compared with pilots in other types of operations.

Further Reading From FSF Publications

Mohler, Stanley R. “Allergy Symptoms May Interfere With Pilot Performance.” *Human Factors & Aviation Medicine* Volume 48 (September–October 2001).

Trending Higher

Percentage of Fatal U.S. Civil Aviation Accidents Involving Antihistamine, CAMI Toxicology Database, 1990–2005



CAMI = U.S. Federal Aviation Administration Civil Aerospace Medical Institute

Source: U.S. Federal Aviation Administration

Figure 1