

# DRUG AND TOXIC HAZARDS IN GENERAL AVIATION

J. Robert Dille, M.D.  
Stanley R. Mohler, M.D.

*Approved by*



J. ROBERT DILLE, M.D.  
CHIEF, CIVIL AEROMEDICAL  
INSTITUTE

*Released by*



P. V. SIEGEL, M.D.  
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## DRUG AND TOXIC HAZARDS IN GENERAL AVIATION

Drugs and alcohol are frequently cited as major causes of automobile accidents (Figure 1). Drugs are rarely reported as a cause of aircraft accidents. This is due to the relatively infrequent search for their presence and to unprecise definition of levels at which most of them begin to impair pilot performance. Alcohol has been found present in up to 35.4 percent<sup>4</sup> of fatal general aviation accidents but a causal role has been ascribed in only about seven percent.<sup>6</sup> This discrepancy is due to the absence of experimentally determined and generally accepted blood alcohol levels where pilot performance is significantly impaired. In practice, the legal level of intoxication for driving an automobile is frequently used. Most authorities agree that the 150 mg % level, accepted in most states, is too high for safely operating even an automobile. Most aviation authorities agree that piloting an aircraft is more complex than driving an automobile. The effects of combinations of alcohol and drugs are of even greater concern.

While improved somewhat over previous years, aerial application still has the highest accident rates among commercial categories of aviation. Evidence of pesticide poisoning has been found in about one-third of fatal aerial applicator accidents, but on two small samples. Here, again, the level at which a causal role should be assigned is uncertain.

Carbon monoxide is the only other toxic material which is occasionally found, and frequently discussed, in general aviation. It is the determined cause of about three fatal accidents per year; most are due to faulty exhaust manifolds and heater assemblies. Carbon monoxide from smoking tobacco products can significantly affect hypoxia tolerance and night vision but this is rarely, if ever, found as an accident cause.

Toxic products of combustion of cabin interior materials and electrical insulation are primarily

of concern in air carrier operation and will not be discussed here.

### DRUGS

Drug usage in this country is almost universal and apparently increasing each year. Many potent drugs can be purchased over the counter; others are prescribed by physicians who do not inquire about or understand the demands of various occupations; and still others are passed around by well-meaning relatives, friends and neighbors.

It is assumed that drugs have frequently been taken by victims of general aviation accidents but their presence is rarely detected and, even if it is, rarely warrants assignment of a causal role based upon present knowledge. A previous report<sup>2</sup> cited two cases where ATR pilots with 3000 and 8000 hours had human factors accidents and liver barbiturate levels of 0.7 mg % and 0.4 mg %. One of the compounds taken also contained d-amphetamine. Despite known possible effects on judgment of both drugs, no causal role was felt assignable.

All known "side effects" are now routinely listed for every drug. The problem lies in predicting the occurrence of these undesirable effects. One approach, the military one, is to ban the use of all drugs by aircrew members. This is neither practical nor enforceable in civil aviation. Supervised test doses are useful to determine individual responses. The fact that the condition for which the drug is taken may, in itself, contraindicate flying should be remembered. The fact that performance with drug-relieved symptoms may exceed performance with unrelieved symptoms (but not performance without symptoms or drugs) must also be considered.

Until more is known, a cautious approach to drug use by airmen is urged. Studies of drug effects on the performance of aviation tasks and expanded investigation of aircraft accidents are expected to provide useful information.

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Some of the medications of greatest use and concern, and some recent accidents involving drugs, are discussed here.

*Analgesics.* Probably no over-the-counter drug is used more often or more indiscriminately than acetylsalicylic acid. Toxic effects are relatively rare and are almost always associated with large doses. However, gastrointestinal hemorrhage, acute renal failure, blood dyscrasias and idiosyncratic reactions (such as urticaria and angioneurotic edema) are possible. Hemorrhage, when it occurs, is usually due to a competitive antagonism with vitamin K and a decreased circulating prothrombin. A reduced tolerance to hypoxia has been found with salicylates, mostly because of an increase in the metabolic rate.

Analgesic compounds containing aniline derivatives may cause methemoglobinemia if used indiscriminately. Excessive use of bromide-containing compounds may cause psychosis or dermatitis. Quinine-containing preparations may cause vertigo, tinnitus, deafness or nausea.

Of greatest concern is the frequent combination of analgesics, antihistamines and decongestants in compounds which may be taken for analgesic purposes only. The roles of these added ingredients are discussed below.

*Antihistamines.* Undesirable effects which are possible with the use of antihistamines are drowsiness, inattention, confusion, mental depression, dizziness, decreased vestibular function and impaired depth perception.

Because of the adverse effects of these symptoms on the safety of flight, airmen generally should not take "short-acting" antihistamines during the 8 hours before flight or take the "long-acting" preparations within 16 hours of flying.

Individual consideration should be given to allergic patients who have taken the same drug and dosage for long intervals with a good symptomatic response and no noted side effects.

"Nonsedating" antihistamines (for example, phenindamine tartrate) should be evaluated for their suitability for safe use.

A 38-year-old pilot was killed in a crash of his helicopter due to the improper operation of the powerplant and flight controls. He had two blood alcohol level determinations reported as 80 and 100 mg % and a "significant" level of an antihistamine believed to be diphenhydramine. The combined effects of these two agents are believed to have caused impaired efficiency and

judgment and are given as the cause of the accident.

Antihistamines have also been implicated in a recently reported British accident.<sup>1</sup>

*Nasal Decongestants.* Since these compounds can occasionally be used to advantage topically during flight (usually for the relief of a blocked eustachian tube during descent), their proper use in flight is not contraindicated. Indiscriminate use of these compounds, particularly by the systemic route, can cause tachycardia, nervousness, tremor, incoordination and mydriasis with visual disturbances.

*Motion Sickness Medications.* Several types of drugs are used for the relief of motion sickness. Scopolamine, a parasympathetic depressant sometimes used for this purpose, is effective but has sufficient side effects to limit its use. Antihistamines are used widely but often cause drowsiness and dizziness. The sedative antihistamines, such as promethazine, are particularly likely to produce drowsiness. Cyclizine and meclizine also can produce drowsiness and blurred vision may occur with cyclizine. However, side effects are less common with these two drugs. Barbiturates have been used but are seemingly of less value and are definitely contraindicated during flight.

Most pilot trainees who become airsick will have no difficulty by the tenth flight. Therefore, cyclizine or meclizine may be temporarily given for motion sickness before training is discontinued, but only under medical supervision, after a test dose, on dual flights and with the consent of the flight instructor. Otherwise, the use of these preparations during flight or within 8 hours to 24 hours (with meclizine) before flight is generally contraindicated.

*Amphetamines.* Amphetamines diminish a sense of fatigue, can delay its onset up to four hours, and tend to force the body beyond its natural capacities. Nervousness, impaired judgment and euphoria are sometimes reported, particularly with overdosage or unusual susceptibility.

Many patients find the stimulation produced by amphetamines pleasant and complain when the physician suggests discontinuance. They can be habit forming and excessive use is common.

When amphetamines are taken in conjunction with a weight reduction program, hypoglycemia may be present. The effects of hypoglycemia are additive to those of hypoxia.

Amphetamines should not be used during flight except in unusual situations (mostly military) in which mission completion is paramount and fatigue represents a greater hazard than drug use during a critical, relatively brief, phase of the flight.

A 35-year-old pilot with 63 hours flying time was killed when he crashed while buzzing a tavern at night. He had a blood alcohol level of 200 mg % and a blood amphetamine level of nine micrograms percent. A 27-year-old pilot with 19.8 hours flying time was killed in an unexplained accident. He had a kidney and liver amphetamine level of 0.1 mg % and tissue amobarbital levels of 0.20 to 1.00 mg %. Causal roles were not ascribed to amphetamine in either accident but the frequent presence of more than one drug is demonstrated.

The monoamine-oxidase inhibitors, which are also psychic stimulants, are rarely indicated for persons who are well enough to fly. Significant side effects, particularly hypotension, blurred vision and excitement, also make flying contraindicated. The possible altered response to other drugs and alcohol should be recognized for this group.

*Tranquilizers and Sedatives.* In most cases, flying is contraindicated by a condition which requires tranquilizers. However, experience has shown that they are prescribed quite liberally and without due concern for the patient's occupation or the undesirable effects of these drugs. While it may not be readily apparent, even the non-sedating tranquilizers usually have some measurable effects on alertness, judgment, efficiency and over-all performance.

Sedatives have been used under controlled conditions by the military to guarantee adequate rest before flight and alertness during flight. Secobarbital sodium, often used for this purpose because it is considered a short-acting sedative, has been found to have effects for up to eight or nine hours when given in 200 mg doses under controlled experimental conditions.

Pilot duties are contraindicated for 12 to 24 hours after the use of sedative agents.

A 50-year-old pilot with 108 hours of flying time had a fatal accident when he departed with one passenger on a VFR flight under IFR conditions. He had blood levels of 0.7 mg % of long acting barbiturate and 40 mg % of alcohol.

A 51-year-old pilot, with 1136 hours, and four passengers were killed when their aircraft went into a spin at low altitude and crashed. A blood barbiturate level of "0.2 to 0.4 mg %", blood alcohol level of 8 mg %, COHb of 12% and fatigue after a four hour flight are felt possibly to have been additive and causal.

A 24-year-old pilot with 2203 hours was involved in a fatal helicopter crash of undetermined cause. He had a blood phenobarbital level of 0.2 mg % which was not felt to be clinically significant. The reason for drug use was not determined.

A 49-year-old physician was known to use narcotics, barbiturates, and tranquilizers. He had lost his medical license. Erratic behavior had been noted for over two years. He had passed out while driving and had had several automobile accidents. A relative, who stopped flying with him, had considered reporting him to the FAA. He had a fatal accident after a stall and spin. He had blood levels of 3.54 mg % of phenobarbital and 0.95 mg % of meprobamate, a combined effect near the stupor level.

A 49-year-old pilot with 100 hours of flying time was killed when his plane dived into a reservoir. He had been hospitalized for depression due to alcoholism two years before. He had blood levels of 100 mg % of alcohol and 11 mg % of bromide.

Attention is drawn here to the involvement of multiple drug, alcohol and physiologic factors, and the family (and sometimes local official) apathy that is observed too frequently.

*Cardiac Agents.* Hypertension and most hypotensive agents are disqualifying for flying duties. While medication is the simplest treatment for a physician to render, most authorities agree that, where indicated, weight reduction is the treatment of choice. A patient with benign essential hypertension without demonstrable eye, kidney or electrocardiographic changes may not require medication if salt intake is restricted and a controlled weight reduction program is instituted, preferably with exercise. Thereafter, the patient can probably fly safely.

Intermittent drug therapy is not indicated because of the long duration of effects, particularly with reserpine.

Because of the common knowledge that drug relief from disqualifying hypertension is available, a military medical evaluation center ana-

lyzes the urine of referred airmen for these agents. Because of the likelihood of a reduction in G tolerance with these drugs, particularly with the ganglionic blocking agents, their use is of greater concern in military airmen.

In civil aviation, medical certification may be granted for pilots who have taken a hypotensive agent (particularly thiazide diuretics) for a prolonged period and who have demonstrated good control of a relatively stable condition with no significant side effects. Such actions must, of necessity, be on an individualized basis.

A 45-year-old pilot with 91 hours entered an unexplained bank and dive just after take-off and he and his passenger were killed. A 0.05 mg % liver level of "quinine or quinidine" raises the question of a possible medical condition under treatment and inflight incapacitation.

Pilots have had pargyline and other drugs prescribed simultaneously; one such pilot has had an accident due to alcohol.<sup>7</sup> Flying is contraindicated with pargyline and most of the agents which augment its effects and pilots should be advised of this by their physicians; *all patients* should be warned of the possible combined effects.

*Muscle Relaxants.* These agents, with or without analgesic and tranquilizer actions, cause sufficient weakness, sedation and vertigo to contraindicate pilot duties within at least 12 hours after their use.

*Steroids.* These compounds are often used systemically for the relief of arthritic, allergic, dermatologic and inflammatory conditions which may not, in themselves, contraindicate the performance of pilot duties. Flying is considered contraindicated for three days after the systemic use of steroids because of the possible mental changes and other undesirable effects. The topical use of these preparations is not expected to compromise flying safety.

*Drugs for Hyperuricemia.* These agents are frequently discussed but there is no unanimity of opinion regarding their acceptability for use by flying personnel. The authors are not opposed to the supervised use of uricosuric agents by asymptomatic pilots with hyperuricemia. Headache and gastrointestinal effects, while undesirable, are not usually incapacitating. An attempt should be made to determine the presence and severity of these or other symptoms when these patients are examined for medical certification.

The xanthine oxidase inhibitors are also reported to be effective and relatively free from side effects.

In metabolic diseases like hyperuricemia and diabetes mellitus, where the treatment and not the disease may be disqualifying for flying, pilots and cooperative physicians will often shun treatment. The relative hazards, both immediate and long term, of the treatment vs. the untreated condition must be considered. Long discussions have resulted from such considerations but these are equally inconclusive.

*Anticholinergics.* Anticholinergic compounds are frequently used and occasionally found associated with aviation accidents and incidents. Since they are frequently combined with sedatives and tranquilizers, their side effects can include, not only blurred vision and ataxia, but sedation, muscle weakness and altered judgment. Their use is contraindicated with flying.

*And Finally, "The Pill".* There are approximately 21,000 active female pilots under the age of 45. We do not know, nor will we probably ever know, the number who take oral contraceptive preparations. Several pilot-physicians who have several patients on these medications have expressed concern over the symptoms of tension noted by "many" of their patients. While there is insufficient evidence of significant undesirable effects at this time to consider control on their reporting or use by female pilots, we must keep abreast of evolving knowledge on thromboembolic, or other, problems with these products and consider these data, age, past medical history, and physical findings in the counseling and certification of these pilots.

## ETHYL ALCOHOL

Everyone interested in aviation safety agrees that drinking and flying do not mix and that alcohol should intensify the effects of hypoxia. However, despite many studies of the subject, there is no generally accepted blood alcohol level, or time after recovery, for the safe operation of an aircraft. The degree to which alcohol increases the effects of hypoxia is similarly inconclusive.

Nystagmic and EEG changes can be noted after the blood alcohol level returns to zero. Decrements in vision and hearing have been reported at levels as low as 10 mg % (though for abstainers and probably not realistic). Judgment, comprehension and fine attention are im-

portant in flying, and are reduced at low blood alcohol levels, but are most difficult to measure. A significant decrement in performance is often not seen at levels below 50 mg %.

A complete review of the literature on this subject is beyond the scope of this paper. The high incidence of alcohol involvement in fatal accidents and the reporting discrepancies were mentioned earlier. The incidence is clearly too high. Further research is indicated to better identify the *legal* level of intoxication with flying. From a practical point of view, considering the high percentage of human factors accidents, individual variation of effects, the frequent presence of other factors such as drugs and fatigue, and residual effects, no alcohol level should be considered compatible with flying. Grounding for three to four hours per drink is suggested as a "rule of thumb" for most situations.

Education and, if unsuccessful, attempted enforcement of existing regulations should be used to reduce the incidence of flying while under the influence of ethyl alcohol.

## PESTICIDES

The high accident rate in aerial application and the high incidence of poisoning in the few accidents investigated were mentioned earlier. We have previously reported several of these cases.<sup>2,3,5</sup>

We are disturbed that several cases of poisoning have been admitted to hospitals, and even to university medical centers, and undiagnosed and/or not treated with available effective drugs. In extensive educational activities with the "ag" operators and pilots, we discourage self-medication. While their use of drugs to reduce symptoms and increase tolerance to the pesticides is dangerous and therefore contraindicated, it must be admitted that most safety-minded aerial applicator pilots know more about the symptoms of poisoning and the correct drugs and dosages than does the average physician.

For physicians who may be called upon to treat any patient with exposure to insecticides, an annual review of the signs, symptoms and treatment is recommended. Purchase of the *Clinical Handbook on Economic Poisons* is also recommended (available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for 55 cents.)

In cases of mild poisoning, miosis, rhinorrhea, and salivation are seen in about 90 percent of the

cases; constriction of the chest is reported by about 80 percent; and dimness of vision and cough are noted by 60 percent. Some report headache, fatigue, anorexia, nausea, increased perspiration, dizziness, twitching, increased dreaming, irritability and mood changes. In severe poisoning, all symptoms are increased with vomiting and uncontrollable muscular twitching having the largest proportional increase in incidence. The most important signs are cyanosis, convulsions, coma, loss of reflexes, and loss of sphincter control.

Diagnosis depends upon the signs and symptoms, the label from the container, reliable information (not from the patient), the blood cholinesterase level, and, in poisoning by parathion and its congeners, the urine paranitrophenol level.

Treatment, which is started before the laboratory values are received, consists initially of establishing an airway, artificial respiration, oxygen and suction when necessary.

Atropine, given intravenously, is the initial drug of choice. The success of treatment is directly proportional to the promptness of administration and adequacy of dosage of atropine.

Atropine is of little or no value in the treatment of poisoning by pesticides other than the organophosphate compounds. It is absolutely contraindicated for pentachlorophenol poisoning, another insecticide which produces symptoms similar to those of the organophosphates, and may be contraindicated in chlorinated hydrocarbon poisoning. The importance of the label and reliable information in making the correct diagnosis is therefore emphasized.

Atropine should be administered intravenously in dosages of 1 to 2 mg (for mild cases) to 2 to 4 mg (for severe cases) every 5 to 10 minutes until atropinization occurs (dry flushed skin, pulse rate of 140 per minute, and pupillary dilatation).

One gram of 2-PAM chloride should be slowly administered intravenously. Another 500 mg should be given in one-half hour if muscular weakness persists. This is a specific chemical antidote which releases cholinesterase inactivated by the phosphate ester but its effectiveness decreases after 24 hours. Best results are obtained when 2-PAM and atropine are both given.

The clothing should be removed and the skin, hair, nails and eyes should be decontaminated.

Symptomatic treatment should be continued for 24 to 48 hours.

A blood sample for cholinesterase determinations should be drawn before 2-PAM is administered.

No morphine, tranquilizers, or barbiturates should be given.

Since there are over 55,000 trade name pesticide products in the United States representing formulations of over 300 different chemicals, problem cases may be encountered. A telephone call to the nearest Poison Control Center is advised for perplexing problems.

The chlorinated hydrocarbon insecticides vary widely in chemical structure and activity. They act primarily on the central nervous but the exact mechanism of action is not known. They also produce some gastrointestinal effects and, at least in animals, liver and kidney damage. They are stored in fat and released very slowly. The fat levels are felt to be mostly inactive materials but convulsions many months after exposure have been noted in animals.

Signs and symptoms usually consist of headache, nausea, dizziness, hyperexcitability, tremor, and, classically with severe poisoning, convulsions which may be followed by coma.

Laboratory diagnosis is difficult. The insecticide or its derivatives can be identified in body fat, urine and stomach contents by properly equipped laboratories. The electroencephalogram may show bilateral synchronous spikes, spike and wave complexes and slow theta waves. These changes may persist for a few months after the last exposure. A good history is important.

Treatment, too, is less specific than for organophosphate poisoning. Removal of the poison from the skin or gastrointestinal tract, high dosages of sedatives and, sometimes, calcium gluconate are the principal effective measures.

## CARBON MONOXIDE

Carbon monoxide constitutes up to 2.5 percent of the volume of cigarette smoke and more in cigar smoke. If the smoke of three cigarettes is inhaled in rapid succession at sea level, a carboxyhemoglobin saturation of 4 percent may result. This can reduce visual acuity and dark adaptation to the extent of the mild hypoxia of 8000 feet. Smoking at 10,000 feet can produce effects equivalent to those seen at 14,000 feet without smoking. The effects of smoking at 20,000 feet are equivalent to the effects otherwise expected at 22,000 feet. With heavy smoking, carboxyhemoglobin concentrations as high as 8 percent are possible.

While the adverse effects of smoking have been, and should continue to be, included in airman education material, this is not likely to be a determined cause of an aircraft accident. This is because of the necessary combined effects and the usual lack of objective evidence.

Carbon monoxide has been found as the cause of death in both general aviation and air carrier accidents with fire.

The greatest threat is from carbon monoxide leaks into the cabin from worn or defective exhaust stack slip joints, exhaust system cracks or holes, openings in the engine firewall, defective gaskets in the exhaust manifold and defective mufflers.

In one aerial application fatal accident, a 40% carboxyhemoglobin level was found. In modifying a light aircraft for crop dusting, the cabin heater was removed and the exhaust aperture ineffectively capped.

While this is a relatively rare cause of accidents, it can be prevented by periodic inspection of the exhaust manifold and heater assembly, awareness of the early symptoms of poisoning and use of a carbon monoxide detector.

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# Half of Traffic Accidents Tied To Drugs' Use

**NORMAN** — Over 50 percent of traffic accidents in the nation can be attributed to the use of drugs, a case officer for the Bureau of Drug Abuse Control told a University of Oklahoma audience Thursday night.

J. W. Hand, a drug expert appearing as the first speaker in OU's public lecture series, discussed drug use and effects. He has done extensive undercover work among drug users in Oklahoma.

Hand outlined types of drugs, saying they include depressants, stimulants and hallucogenics.

## Stimulants Listed

"Stimulants in the form of pep pills," he said, "don't really pep you up. They simply deactivate that part of the brain that lets you relax."

Hand listed alcohol, glue sniffing and marijuana as depressants which could have some bizarre effects. He said marijuana gives the user a bright subjective outlook while the object of reality remains the same.

Hand said LSD, a hallucogenic drug which has been called "mind expanding," actually gives the user a one-track mind.

The personal effects that drugs may cause don't bother Hand as much as the anti-social behavior that is produced.

## Abuse Contagious

"I really don't care if someone wants to get high," he said, "but I am concerned for the innocent who might be involved."

"We have found that drug abuse spreads like a contagious disease," Hand said. "It spreads through social contact and many people wish we would consider it a health problem."

The narcotics officer said drug pushers will "go to any means" to promote their products.

He said that if the nation "goes to pot (marijuana)" that is exactly what it, in fact, will do.

# Use of Prescribed Drugs Is Becoming A Factor in Cause of Traffic Accidents

By GERALD R. THORP  
Of The Post-Dispatch Staff  
THIRD OF A SERIES

One of the most puzzling intangibles among basic causes for motor vehicle accidents is driver use of drugs.

The drug problem in driving has been a fringe field for investigation by medical-traffic experts for many years, but at this point they generally agree: "We still don't know enough about it."

Two separate arrests were made by St. Louis county police in April in which the drivers

appeared to be intoxicated. However, both registered zero when given clinical tests that would have indicated alcohol in the blood.

"The driving of both men had been so flagrantly erratic that it was apparent something had influenced their normal behavior," said Sgt. Edward Willette who is in charge of the county's Traffic Safety Bureau.

Additional investigation disclosed that one driver was "high" on illegal drugs he had stolen. In the second case, the motorist had been taking drugs prescribed by a physician for a minor ailment.

Robert B. Forney, research professor at the University of Indiana's Indianapolis campus, told the Post-Dispatch: "We all know that there is a strong correlation between drug use and

erratic driving. This is a problem that will become more intense because in the modern era nearly every driver at one time or another will have had occasion to take a prescribed drug, unaware of its possible side effects."

Dr. L. C. Norman, a British authority in the field, wrote: "The innumerable new drugs which are being introduced week by week, almost day by day, make it impossible for the patient to know the side effects."

"Indeed, tragically, the doctor does not always know them, but what he does know he should impart to his patient as a driver . . . With antihistamines, to take just one example, the patient should be advised to give himself a trial of the effects. If he is taking a new antihista-

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78  
Dead

71  
Last Year

**Drinking Drivers:** More than half the drivers and pedestrians killed in San Antonio, Texas, during the past nine years were drunk, according to a study by Robert Hausman, MD, the county medical examiner. He based his report on studies, most of which included complete autopsies, of 301 drivers and pedestrians who were killed.

**Blood Alcohol:** Iowa's deputy state commissioner of public safety, James P. Hayes, suggested to a statewide Iowa traffic safety conference in Des Moines that a state law be passed fixing a minimum blood alcohol level for determining whether a motorist is intoxicated. Iowa law now fixes no blood alcohol level as presumptive evidence, but evidence of amounts of alcohol in the blood as shown by tests is admissible in court. Hayes pointed out that both the American Medical Association and the Iowa Medical Society recommend that 0.10 of 1% be considered presumption of intoxication.

**Auto Toll:** The National Safety Council predicted that 1966 auto accidents would cause the highest death toll in history. The toll through the first 10 months of this year, it said, was 43,110—9% above the 39,610 in the first 10 months of 1965. In Washington, the Insurance Institute for Highway Safety estimated that drinking may have been a factor in half of the 4,920 traffic deaths during October.

# Half of Fatal Car Accidents Linked to Drinking

By JOSEPH HEARST  
Chicago Tribune Press Service  
WASHINGTON — The issue of building more safety into automobiles took a back seat Wednesday as a Congressional committee discussed drinking drivers.

Dr. Philip R. Lee, assistant secretary for health and scientific affairs of the Health, Education, and Welfare Department, told the House Commerce Committee alcohol is a major contributing factor in fatal accidents, involving both pedestrians and vehicle occupants.

He said half of the fatal accidents have some association with alcohol. He said millions drive after drinking and that his de-

