

Propoxyphene in combination with other compounds.—As in most studies, propoxyphene-related deaths in Oregon commonly involve other compounds, most commonly ethanol, diazepam, and a wide variety of others. When it is felt that another chemical agent contributed along with propoxyphene to the death, the death is attributed to the combined effects of propoxyphene and the other agent or agents, and is so indicated on the death certificate. If propoxyphene is the only drug detected in significant quantities and other agents are either absent or felt to be insignificant in their concentrations, death is attributed to propoxyphene alone.

Of the propoxyphene-related deaths ruled either accidental or undetermined manner, approximately 60% represented deaths from propoxyphene alone. The remaining 40% resulted from the combined effects of propoxyphene and other agents, most commonly ethanol or diazepam (Valium).

Accidental overdoses of propoxyphene.—It is this category into which most of the propoxyphene overdoses in Oregon appear to fall. About two-thirds ($\frac{2}{3}$'s) of propoxyphene-related deaths are determined to be accidental. Of these, the majority involve propoxyphene and its metabolite as the only significant compounds detected on thorough toxicologic screening.

BACKGROUND HISTORY OF ABUSERS

The cases in Oregon run the gamut of the sociologic and socioeconomic spectrum. Most involve deaths of individuals in their 20's or 30's with a slight male bias. A few were offspring or spouse of physicians and professionals; some become clearly addicted to the medication while using it for a legitimate variety of pain problems such as on-the-job injury or surgical complications. Others became addicted while using the drug for pain of psychosomatic origin or for its euphoric effect.

In the majority of instances, examination of the individuals' background elicited an unstable mental history and, in many cases, a pattern of multiple drug abuse, psychiatric hospitalization, alcoholism, and the like. A few has a history of intravenous narcotism at some time during their life. For the most part, however, propoxyphene abusers are not the illicit drug abusers prone to use heroin or "street drugs."

SOURCE OF MEDICATION

In the large majority of cases, propoxyphene was obtained by legitimate physician prescription. Eli Lilly's Darvon products were the medications most often obtained. In a few instances, deceased individuals obtained drugs from different physicians and frequented different pharmacies in an attempt to hide their abuse. More commonly, the drug was obtained from a single physician and a single pharmacy. We should remember that propoxyphene is a Schedule IV medication under the Comprehensive Drug Abuse Prevention and Control Act of 1970. This enables the patient to refill an oral prescription up to five times during a six-month period without the knowledge of his physician.

Illicitly-manufactured propoxyphene is not a significant problem in Oregon. It is rare that the source of the drug was an "on the street" purchase. Commercial bottles or propoxyphene were discovered in a handful of cases and were likely obtained in pharmacy burglaries. In each of these instances, the deceased individual has a strong history of multiple drug abuse and usually a heroin habit.

WHY THE ALARMING NUMBER OF ACCIDENTAL DEATHS FROM THIS DRUG?

It should be noted that I have yet to see a case of accidental death from this drug when taken as recommended, i.e., 65-100 mg every 4-6 hours. In every instance, the deceased has taken more than the recommended amount of medication, though the repetitive nature in which it is taken prohibits me answering the question "How much is too much?"

In my opinion, these accidental deaths result not from propoxyphene itself, but from its metabolic breakdown product. Propoxyphene is broken down to a variety of compounds by the liver, the most significant of which is nor-propoxyphene. The crux of the problem is the largely-unrecognized toxicity of the nor-propoxyphene metabolite and its prolonged retention in the body. Finkle's study alluded to the fact that nor-propoxyphene may be toxicologically more important in many cases than the parent drug. In Finkle's survey, the level of nor-propoxyphene was determined in a miniscule percentage of cases, and the authors cited