A Short Series of Toluene Impaired Drivers

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The abuse of volatile compounds is commonly referred to as “huffing”. Often the subject saturates a rag with solvent, places it over the mouth, or inhales or sprays the volatile substance directly into the mouth resulting in altered consciousness. Toluene is among the most frequently abuse inhalants, found in solvents, paints and other products. Onset of symptoms occurs within seconds to minutes following inhalation and produces an intense euphoria followed by sedation and unconsciousness.

We report here a series of six toluene impaired drivers who were evaluated by Drug Recognition Evaluation (DRE) officers. Blood toluene concentrations were determined by headspace GC, with headspace GC-MS confirmation. The relative retention time (RRT) of toluene to the n-propanol internal standard of 3.77 and 2.84 on 2 different systems, (ethanol RRT is 0.61 and 0.57, respectively). In each case toluene was the only impairing substance identified. All six subjects were males and their ages ranged from 25 – 55 (mean 36 years) and had the blood toluene concentrations ranged from 12 – 45 mg/L (mean 24 mg/L). The half-life of toluene in blood is 13 - 68 hours. A 1979 study of toluene abusers described significant signs of intoxication in subjects with blood concentrations of 1 - 2.5 mg/L. Half of those with blood concentrations between 2.5 - 10 mg/L were hospitalized for marked intoxication.

Two of the subjects we encountered were contacted after motor vehicle crashes. Three were stopped for severe erratic driving, and one for failing to stop at a red light. In all cases, impairment was very obvious; subjects had slurred speech, red, bloodshot watery eyes, appeared severely intoxicated. Solvent abuse was suspected due to an obvious chemical odor. One subject had gold paint all over his face. All but one subject were candid as to their methods and frequency of abusing the inhalant. For those who performed the DRE evaluation, there were inconsistencies on performance. Subjects generally did poorly on the walk and turn test. One subject was unable to keep his head still long enough to complete the HGN test, however the remaining five subjects had six of six clues present. Four subjects attempted the convergence test and all exhibited a lack of convergence. The results on the remaining tests were not consistent, for example 4 of 6 subjects completed the Romberg Balance test and of these, 2 exhibited fast internal clock, while 2 were very slow. Similarly, there were inconsistent observations on heart rate, blood pressure, pupil size and muscle tone. All subjects admitted to huffing in the car, and made statements which indicated that it was their practice to do so while driving, because the effects wore off rapidly.

This group is older than the stereotypical young adult inhalant abuser. The blood concentrations of these cases were much higher than earlier reports. This is consistent with longer term inhalant abuse and several of theses subjects did indicate they had been huffing for years. From the treatment literature inhalant dependent adults have the poorest prognosis for recovery.

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