PEth Testing

Phosphatidylethanol (PEth) is an abnormal phospholipid formed in cell tissues following ethanol alcohol exposure. During the metabolism process, PEth accumulates in the blood and exists as a component of the red cell membrane. Since it is formed ONLY when the body is exposed to ingested ethanol, PEth is considered a DIRECT mid to long-term alcohol biomarker, remaining detectable in the blood for up to 28 days. A positive result is an indication of intentional alcohol drinking during the 2-4 weeks prior to the collection of the blood. Additionally, the half-life of PEth is 3-5 days, therefore, one could reasonably assume PEth levels based on the individuals' last report of use, based on an available baseline reading.

While ethyl glucuronide (EtG) urine drug testing is a sensitive and valuable assay for those individuals in treatment programs for alcohol abuse, recent studies have indicated that low level positive EtG results can be produced by certain agents like hand sanitizers and mouth wash. In contrast, the PEth assay helps to discriminate between incidental exposure and intentional alcohol ingestion, as the volume of alcohol required to trigger a positive PEth result is far above the level commonly attained by incidental exposure.

In summation, positive PEth results are a result of intentional alcohol ingestion and CANNOT be produced by incidental topical exposure to ethanol, ie.) hand sanitizer, gasoline, isopropyl alcohol prep pads, or even vodka itself.

An article published in the November 2018, Vol. 63, No. 6, Journal of Forensic Sciences named "The PEth Blood Test in the Security Environment: What it is; Why it's Important; and Interpretive Guidelines" is a critically peer reviewed article that I rely on to understand and interpret positive PEth results. Additionally, the same article is currently the gold standard by which USDTL (United States Drug Testing Laboratory), SAMHSA (Substance Abuse & Mental Health Services Administration), and a consensus of Lab Authorities across the globe currently refer to for guidance on PEth education.

This same article refers to the Legal Valuation of PEth testing being accepted by both administrative hearings across the US, including the US 7th Circuit, where it was determined that "PEth in blood is in current use all over the world and have been accepted by professionals in this specialized world" and that "these tests are being used all over the country for family court matters as well". According to the Texas Bar Association in 2017, "it is clear that the PEth has been judged to be meaningful in aiding court decisions".

The interpretive guidelines outlined in the article state that:

PEth levels < 20ng/ml: "***Light or No Consumption***" May be related from abstinence to ingestion averaging less than 2 drinks/ day for several days a week.

PEth levels 20-200ng/ml: "***Significant Consumption***" Moderate level of drinking, averaging 2-4 drinks/ day for several days a week. These ranges are consistent with the NIAAA (National Institute of Alcoholism and Alcohol Abuse), SAMHSA (Substance Abuse and Mental Health Administration) and The World Health Organization's definitions of moderate drinking. For men, no more than 4 drinks/ day or 14 drinks/ week; women, no more than 3 drinks/ day or 7 drinks/ week).

PEth levels >200ng/ml: ***"Heavy Consumption"*** Heavy drinking at least 4 drinks/ day, several days a week. Anything above 4 drinks/ day is what the NIAAA (National Institute of Alcoholism and Alcohol Abuse), SAMHSA (Substance Abuse and Mental Health Administration) and The World Health Organization consider to be heavy drinking and to be categorized as high to very high risk.