



Pathology Biology Section – 2010

G106 Death in a Wine Vat

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After attending this presentation, attendees will understand the necessity of good collaboration between the different institutions that work on an undetermined death crime scene and will become familiar with the autopsy presentation of death by inhalation of carbon dioxide (CO₂).

This presentation will impact the forensic science community by increasing understanding the need for collaboration between the different institutions (e.g., police, casualty department, national toxicology department, local eco-toxicology department, regional wine institute) to get the cause of death in a unclear case.

A 42-year-old man was found unresponsive by his father with the head and the left limb in a wine vat. The father could not remove the body, so he immediately called for a help. The emergency responders found him in asystole and pronounced him dead after twenty minutes of a resuscitation attempt.

The vat of 1,750 liters (455 gallons) was fuelled at 80% with grapes the day before. To give a better aroma and flavoring to the wine, 40 kg (88 pounds) of dry ice were added into the grapes. The worker had to then check the evolution of the must. For that, he had to regularly take samples to look at the color, to smell and to taste the must, especially during the period of fermentation of alcohol (about 15 days).

Autopsy showed cyanosis of the face and the neck, conjunctival petechiae, cerebral edema, and signs of acute anoxia into the brain. Toxicological analysis was negative. The National Toxicology Department suggested that it could be an intoxication by carbon dioxide, but could not prove it, because of the evaporation of the gas (CO₂).

The day after, the scene was visited with the police to try to understand the events. The Local Eco-Toxicology Department was asked to perform the analysis of the air on the top of the vat. They found 100% of CO₂. The Regional Wine Institute speculated that the addition of dry ice produce immediately a lot of CO₂ and not progressively as in a normal fermentation. In this case, if someone breaths inside the vat, loss of consciousness can come in a few seconds and then the death in a few minutes. Finally, as a result of the police investigations, a pair of glasses were found inside the vat when it was emptied after three months. It was concluded that the worker had lost his glasses into the vat and he tried to recover them.

The medical literature contain only a few cases of intoxications by carbon dioxide, occurring in ship holds, in the brewing industry, in silos, tunnels, sewer shafts, and poultry plants that use dry ice, but rarely in wine industry.

The cause of death was not determined on the basis of the autopsy. But the information received from the different institutions allow the determination the cause of death as an acute intoxication by carbon dioxide and the manner of death as a accident, due to the loss of glasses in the vat.

Death, Wine Vat, Carbon Dioxide