RUANE
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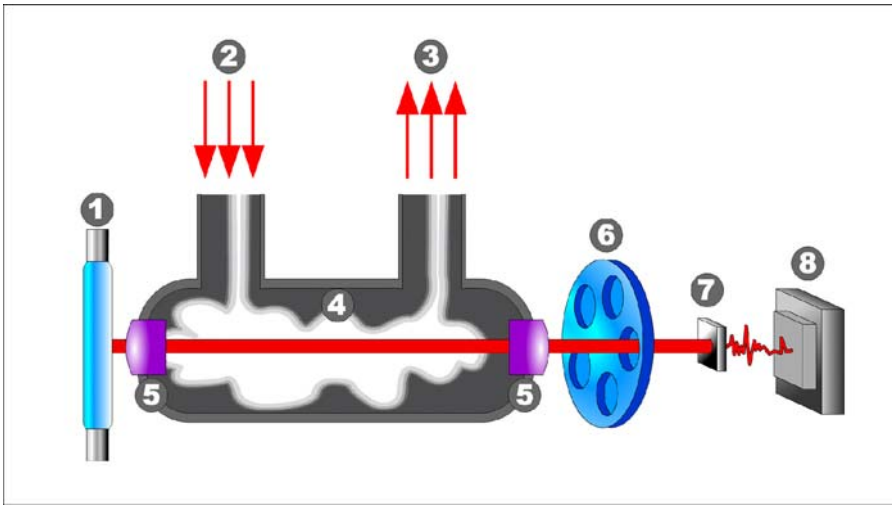
Intoxilyzer 5000

The Inxtoxilyzer is the machine which is used by law enforcement in Connecticut to test for the presence of alcohol when they have arrested a person for DUI. The machine is manufactured by a company called CMI from Kentucky. This device uses infrared spectroscopy, which identifies molecules based on the way they absorb infrared light.

All molecules are constantly vibrating, and these vibrations change when the molecules absorb infrared light. The changes in vibration include the bending and stretching of various bonds. Each type of bond within a molecule absorbs infrared light at different wavelengths. So, to identify ethanol in a sample, you have to look at the wavelengths of the bonds in ethanol (C-O, O-H, C-H, C-C) and measure the absorption of infrared light. The absorbed wavelengths help to identify the substance as ethanol, and the amount of IR absorption tells you how much ethanol is present.



In the Intoxilyzer:

1. A lamp generates an infrared beam.
2. The subject blows into the breath intake.
3. The breath eventually passes out the discharge hole.
4. Subject breath accumulates in the sample chamber.
5. The infrared beam passes through the sample chamber
6. The beam focused by a lens onto a spinning filter wheel.
7. The filter wheel contains narrow band filters theoretically specific for the wavelengths of the bonds in ethanol.
8. The light passing through each filter is detected by the photocell, where it is converted to an electrical pulse. The electrical pulse is relayed to the microprocessor, which interprets the pulses and calculates the BAC based on the absorption of infrared light.