

9057 - What is Nicotine Addiction?



Nicotine in the natural environment is the tobacco plant's natural insecticide. It is bit by bit as lethal as strychnine or diamondback rattlesnake venom – and three times deadlier than arsenic. Oddly enough it mimics our body's neurotransmitter acetylcholine. Once inside the brain it fits like a lock and key into many chemical interactions that directly and indirectly control the flow of over 200 neurochemicals.

Within the first eight seconds of that initial nicotine inhale is a flooding of dopamine (feel good neurotransmitters) into the brain. This flooding of chemicals gives you the "aaahhh" sensation you receive upon smoking. This flooding is addictive and creates a positive reinforcement in the body – pushing you to continue smoking. This type of reaction also happens with cocaine, and amphetamines – two other highly addictive drugs.

Brain Creating Dependency

The reason nicotine, a toxic poison, is so addictive is due to its hold on the reward circuits in the brain. There have been several studies showing that can be more addictive than cocaine or heroin, although it affects the reward thresholds in an opposite way those drugs do.

Nicotine causes down-regulation of the body's natural production of dopamine. This is the body's natural way to try and compensate for the artificial stimulants being inhaled into the body. Due to the increased levels of nicotine, acting as acetylcholine, the sensitivity of these receptors decreases. To counteract the decrease in sensitivity caused by nicotine, the body increases the number of receptors in the brain – this is up-regulation. The net effect is an increase in reward pathway sensitivity. This increased sensitivity can last for several months even after the intake has stopped.

Now that the brain has adjusted to this new "state" of increased pleasure-causing neurotransmitters, it is out of kilter. This new "state" is entirely built around your intake of nicotine. This is why quitting leads to unpleasant feelings of mood swings and anxiety. But these feelings are just temporary. Just as your body adjusted in the first place, it will adjust back to your old, "normal" self.

Remember that your neurotransmitters are de-sensitized (even though you have more) and you may temporarily find it hard to enjoy once pleasant activities. As your body has stopped producing as much dopamine as it used to due to the artificial influx from smoking, you may feel down and have mood swings for the first few days.

