Chemistry Honors Project

Turning Off the Drug Tap

By

Alex Parker
Illegal drugs such as cocaine, heroin, and various designer drugs flourish in the streets of today. Many drugs have been around for centuries, like opium, and many have only recently been discovered, such as ecstasy (doitnow.org). Illegal drug use has become a major concern of law enforcement agencies in the United States, especially in the past thirty years. To combat the creation of illegal drugs the DEA established the turning off the tap method of drug control in 1988, which makes it illegal to control certain chemicals without a permit that can possibly be used to create illegal drugs. The creation of illegal drugs requires one of two types of chemicals, precursor chemicals, and essential chemicals. Precursor chemicals are used to extract certain chemicals from a plant base, such as cocaine from the cocoa leaf. Essential chemicals are used in conjunction with other chemicals and bond molecularly to become a part of the illegal drug. This method of drug control was originally aimed at cocaine and heroin, but was latter modified to include all drugs with effects similar to cocaine and heroin.

Cocaine is possibly the largest and most widely used target for the turning off the tap method that involves control of the precursor chemicals. The coca leaf, from which cocaine is derived, has been abused for over three thousand four hundred years. Cocaine is found in nature in its uncultured form in Bolivia, Brazil, and Peru. It makes up 0.5-1.0 percent of all alkaloids in South America (erowid.org). Cocaine is an example of a chemical that can be controlled to a degree by the turning of the tap method of drug control. By focusing on two very necessary precursor chemicals, Potassium Permanganate and methyl ethyl ketone the DEA is able to reduce the amount of cocaine that is produced. Potassium Permanganate is key to the production of cocaine because without it cocaine can’t get past the crude cocaine base known as sulfato (cia.gov). The
DEA also has the chemical methyl ethyl ketone as a listed chemical under control, but diethyl ether may be used as a substitute for methyl ethyl ketone and diethyl ether is not yet a DEA listed chemical. Methyl ethyl ketone and its substitute diethyl ether are only used in the last stages of cocaine conversion and the to be cocaine already attained a purified form. Even without methyl ethyl ketone the cocaine is able to reach a purified crude cocaine base. If both precursor chemicals in the last stages of development are controlled the crude base will never reach the converted cocaine hydrochloride (chemical formula C17H21NO4)(cia.gov). In the entire turning off the tap method seems most effective with cocaine than with any other illegal drug.

The drug heroin (chemical formula C21H23NO5) was once thought to be the great party drug of the rich and famous. Now its influence has weaned due to its horrible psychological and physical affects and cocaine was taken its place as the drug to take. Heroin use still is a major threat evidenced by those that die each year on overdoses. Heroin was originally created as substitute for morphine in patients who needed something stronger because they developed a resistance to morphine alone. The drug was used clinically under the name Diacetylormophine, since it was derived from morphine. However patients exhibited strange side effects such as happy hallucinations and very strong withdrawal problems (erowid.org). Heroin is a prime example of a drug that the turning off the tap method does not hinder its production. After the resin from the poppy pod is scraped off and collected it is referred to as crude opium. This crude opium is then boiled and processed and morphine concentrated. Reacting the morphine heavy solution with acetic anhydride produces heroin (cia.gov). The target for the turning off the tap method is acetic anhydride the only precursor chemical that doesn’t have a readily
available substitute. The problem lies in the fact that acetic anhydride is an industrial
chemical that is used to produce many things such as certain detergents and almost all
printing inks. Control of a chemical that is used so readily is very difficult. All sales over
one thousand liters must be accompanied by a permit by the DEA. This does not have a
significant affect on heroin production because very little acetic anhydride is needed.
Most of the world's heroin is produced in small huts near poppy fields, and there is little
chance that any of these "hut productions" are capable of using anywhere near a thousand
liters of acetic anhydride. It is easy to see why the turning off the tap method is not very
effective in stopping the production of heroin (cia.gov).

The newest problem of law enforcement agencies comes in the form of the
designer drugs. The essential chemicals are mainly found in the production of designer
drugs. A designer drug is now defined as any chemically manufactured drug that imitates
the psychotropic effects of known illegal drugs such as cocaine and heroin. The designer
drugs were originally designed to get around the law. Before 1987 only drugs that were
known to the DEA were deemed illegal, therefore it was possible to create a new drug
with similar effects as cocaine and heroin that would still be perfectly legal. Sometimes
these new drugs were even more powerful and much deadlier than the intended drug. In
one instance the designer drug “Tango & Cash” was produced by a drug laboratory as a
substitute for heroin. The drug was distributed to known dealers in the Bronx area and
was sold by the dealers as heroin. Three days after the initial sales, overdoses started
pouring into hospitals with over twelve deaths and 130 users were hospitalized. The
victims thought that they were using heroin, acetomorphine, but were actually using
alpha-methylfentanyl, which has effects similar to that of heroin but at a small fraction of
the dose. A similar case occurred in 1982 a chemist was attempting to create an analog of the narcotic Demerol and he created the drug known as MPTP. He then sold to local drug dealers in California. The dealers then sold the drug as the form of heroin known as China white. Users were usually found dead or paralyzed where they took the drug. The paralysis was usually so fast acting that many users were found frozen in place with their needles still in their arms. Those that survived the use of the drug almost always developed Parkinson’s disease. Such devastating results soon prompted the DEA to create the Controlled Substance Analog Act of 1986. This made all drugs that have psychotropic effects similar to cocaine and heroin illegal (doitnow.org).

Unfortunately designer drugs still are very much available to the willing user, and very much creatable to the drug chemist. This is due to the fact that most designer drugs are easy and cheap to produce. All that is needed to produce most designer drugs is a kitchen sink, household chemicals and a little knowledge of chemistry. In order to stop the production of designer drugs the turning off the tap method of drug control can target specific essential chemicals needed to produce designer drugs. The designer drug angeldust (phencyclidine) requires the essential chemical piperdine in its production. By outlawing the manufacture of piperdine the DEA has effectively reduced the amount of angeldust produced. The drug known as meth (methamphetamine) has been widely used lately, but especially in the rural south. Meth needs ephedrine or raw phenylacetone to be produced. Even though both ephedrine and phenylacetone are both DEA listed chemicals this has not significantly slowed the production of meth. Possibly the most commonly used designer drug among young people is ecstasy (MDMA). Ecstasy is often used in conjunction with many other drugs and is very common at clubs and parties. Ecstasy
causes the user to experience a carefree feeling of elation that usually wears off after a few hours and leaves the user feeling very tired after its effects wear off. It is very difficult to isolate the essential chemicals used in the production of ecstasy because there are so many different forms of the drug. Many pills are sold as ecstasy that do not even include MDMA, and are instead reliant on other drugs such as cocaine to produce a high (erowid.org). The DEA has been, for the most part, successful in eliminating singular designer drugs, but whenever one designer drug is on its way out it seems as if there is another on its way in (erowid.org).

The DEA seems to be taking the necessary steps in order to slow the production of illegal drugs. But the creation of illegal drugs does not need to be slowed it needs to be stopped. In this area the DEA is not wholly successful since many drugs aren’t affected by current regulations and listings. Perhaps using new technology and current knowledge of the chemical structures of illicit drugs it would be possible to create faster methods of identifying drugs. Whatever the case something different needs to be done to make a more positive effect on the drug war.
Works Cited

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