

# NARCOTIC EDUCATIONAL FOUNDATION OF AMERICA

Drug Abuse Education Provider of the:

**California Narcotic Officers' Association**

## LySergic acid Diethylamide IS IT A DREAM OR NIGHTMARE?

### QUICK FACTS:

The chemical substances classified in this group are referred to as the Hallucinogenic / Psychedelic drugs. Psychotomimetic refers to drugs that mimic a psychological or psychotic state. Hallucinogen refers to the hallucinations that these drugs may produce. Psychedelic means mind expanding. This drug group has the ability to induce visual, auditory, or other hallucinations, and to separate the individual from reality. They produce a wide range of behavioral alterations; thus their classification by chemical structure is difficult. However, these drugs are thought to alter the synaptic transmission process in the human brain. There are several chemical substances commonly thought to serve as synaptic neuro-transmitters within the brain. Such substances include acetylcholine, norepinephrine, and serotonin. There are both natural hallucinogens such as mushrooms, and those synthetically made from chemicals such as LSD. There is no documented withdrawal syndrome related to abuse of the hallucinogenic drugs or this reason, the psychedelics have been shown to produce no true physical dependence.

### PERCEPTUAL DISTORTERS (PSYCHEDELICS)

#### HISTORY OF DRUG:

Natural compounds that alter the human consciousness have been used for thousands of years. These compounds were used by certain native peoples for spiritual enlightenment, not recreational use. With the advent of modern chemistry and technology, a new class of compounds have been developed and abused. This group of compounds has been classified by many different names, however, they are best described as hallucinogens. An hallucinogen may be defined as a "compound that causes gross distortions in perceptions, without loss of consciousness, when taken in nontoxic dosages."

There are numerous hallucinogenic drugs, but the most famous of this drug group is a synthetic drug that has been in existence for the last 50 years, known as d-lysergic acid diethylamide (LSD).

During the middle ages, frequent epidemics of "Saint Anthony's Fire" were documented. This disease produced two groups of symptoms. The first group consisted of seizures and convulsions. The second group consisted of gangrene, skin blistering, and spontaneous abortions. The disease was often fatal and many of its victims suffered from hallucinations.

### NEUROTRANSMITTERS ASSOCIATED WITH HALLUCINOGENS

#### ACETYLCHOLINE PSYCHEDELICS

- Atropine, scopolamine, muscarine - from plants such as belladonna or deadly night shade, jimson weed, stick weed, thorn apple and henbane.

#### NOREPINEPHRINE PSYCHEDELICS

- Mescaline, DOM (STP), MDA, MDMA, TMA. Myristicin - from plants such as peyote and mescaline derivatives; myristicin is from nutmeg and mace.

#### SEROTONIN PSYCHEDELICS

- Lysergic acid diethylamide (LSD), Phencyclidine (PCP), Ketamine.

### History (continued from column 1)

This fatal disease was caused by a parasitic fungus (claviceps purpurea) known as "ergot." The "ergot" fungus grows on rye, grain, and wild grasses. The affected rye was ground into flour and baked into bread.

The chemists of the early twentieth century were able to isolate several useful compounds from the ergot fungus. One of these compounds, ergotamine, is used in contemporary medicine to contract the uterus after childbirth, in the treatment of migraine headaches, and to constrict the capillaries. Ergotamine tartrate is also a chemical that is necessary for the manufacturing of Lysergic acid diethylamide (LSD).

The birth of the "psychedelic age" began in 1938 when Dr. Albert Hofman developed, from a fungal plant, rust called "ergot," a compound called LSD. Five years later Dr. Hofman decided to see if LSD could be developed into an analeptic compound to stimulate blood circulation and respiration in elderly people. Even though LSD was originally made from fungus, today it can be produced easily and synthetically in a laboratory.

*Lysergic acid diethylamide - REAL or IMAGINARY THINKING ?*

## FIRST RECORDED “TRIPS” ON LSD

Chemist Dr. Albert Hofman, the developer of LSD, describes in his journals about his own personal experiences with the drug. While crystallizing the LSD compound in the form of a tartrate, he accidentally absorbed “an immeasurable trace” of it through his fingertips. Dr. Hofman described his first unintentional use as “a not unpleasant intoxicated- like condition” occupying two hours of interesting imagery. From 1943 to 1970, Hofman used LSD about 15 times and concluded that there was simply no way to guarantee either a good or bad “trip.” “The experience is handled best”, Hofman cautiously counseled, “by a stabilized person with a meaningful reason for taking LSD.”

## THE “SUMMER OF LOVE” EXPERIENCE

In the 1960’s Aldous Huxley (Brave New World) reinvestigated Dr. Hofman’s research, and the popularity of lysergic acid diethylamide effects were predominantly found in the Haight-Ashbury district of San Francisco. As the “summer of love” spread, so did LSD’s popularity. However, as the life styles of the 60’s faded, so did the general popularity of the drug LSD. It seems to be that today’s love affair with the memories of the 60’s has renewed the interest and abuse of LSD.

## CONFUSED BRAIN INFORMATION

A user who is under the influence of a psychedelic may speak of “seeing” sounds, “tasting” colors, and “hearing motion.” This cross circuiting of brain information is called “synesthesia”.

## CORROBORATIVE SIGNS

### UNDER THE INFLUENCE OF HALLUCINOGENICS

- ◆ Losing of emotional inhibitions
- ◆ Spontaneous laughter
- ◆ Tears and smiling without cause
- ◆ Relaxation of tensions
- ◆ Euphoria
- ◆ Synesthesia
- ◆ Time and depth perception impairment
- ◆ Hallucinations
- ◆ Irrational behavior

## LSD ACTIVITY IN THE HUMAN BODY

LSD is produced in its salt (water soluble) form. It can be placed upon any type of medium. It has no odor, no color, and no taste. The crystalline form is dissolved in a solvent solution and placed or soaked onto a medium and allowed to dry. The medium is placed into the mouth, where the LSD dissolves in the saliva and ingested into the body. LSD has been found on many types of mediums: sugar cubes, saccharin tablets, gelatin capsules, gelatin squares (window panes), paper squares (blotter paper), colored liquid (for oral use or being placed into the eye or sprayed onto the skin (“golden rain drops”).

LSD is extremely active in small amounts. The usual dose ranges from 50 to 300 micrograms which is equivalent to 0.00005 to 0.0003 grams. When comparing this amount with the weight of a package of the sweetener, Sweet-n-Low, which weights about 1 gram, it is easy to appreciate the potency of LSD. This would mean that the weight of one Sweet-n-Low package would be equal to the weight of approximately 3,333 to 20,000 doses of LSD.

Other ways of ingestion may include dissolving the LSD in a solvent (usually colored ) where it is placed onto the eye, swallowed, or dissolved in Dimethylsulfoxide (DMSO) and sprayed onto the skin where it is rapidly absorbed into the system. It cannot be ingested by smoking, as LSD is destroyed by exposure to heat and sunlight. If it is kept in a cool, dark location, it will not lose its potency over time.

## “FORMS” OF LSD (ACID)

Standardization of doses has gone a long way to increase the popularity of LSD. The big seller is blotter acid featuring tiny characters such as the green and red dragon, Mickey Mouse as the Sorcerer, and other cartoon characters.



## BLOTTER PAPER

## PSYCHOLOGICAL VERSUS PHYSICAL DEPENDENCY OF LSD

Emotional changes occur with LSD use, but are unpredictable. A mood can shift quickly from intense euphoria to despair, due perhaps only to the fact that the sun went behind a cloud. Also, at times, laughter or tears may occur which seem inappropriate to the situation.

Some psychological dependency can occur with LSD use, but no evidence has been found to indicate the development of physical dependency. Tolerance to the physiologic and psychic effects of LSD can and does occur. This tolerance occurs rapidly with use and disappears rapidly after discontinuation. Cross-tolerance between LSD, mescaline, and psilocybin also occurs, indicating possibly a similar mechanism of action for these drugs.

Acute panic reactions can occur with LSD that result in a "bad trip" (or bummer). These panic reactions usually occur owing to a feeling of imminent danger. If these panic reactions become intense and prolonged, a state of drug-induced psychosis can result. The psychotic episode may be brief, or it may last for several years. The mechanism of the LSD action is not known. It may be an unmasking of a previous psychosis, although it is difficult, if not impossible, to predict when and with whom such reactions occur. There is also an increased risk of self-destructive behavior with LSD, and the other perceptual distorters.

## PROMINENT LSD EFFECTS

Other prominent effects seen with LSD are feelings of depersonalization, a loss of body image, and loss of reality. The perception of time is distorted and the sense of the past, present, and future may be jumbled. Concentration can be difficult, and attention can fluctuate rapidly. There is a profusion of vague ideas, and often an extreme preoccupation with philosophical issues. This unrealistic outlook, coupled with impairments in judgment and illogical thought processes, may cause the users to believe they have "discovered" new truths.

*(continued column 2, this page)*

## Effects *(continued from column 1)*

LSD use has been shown conclusively to cause birth deformities. An increased incidence of spontaneous abortions has been noted when pregnant women use LSD. However, this is not surprising since other "ergot" derivatives are often used medically to induce labor, and LSD shares this common ability to a certain extent.

### PSYCHOLOGICAL FACTORS INCLUDE:

- ◆ Amount taken.
- ◆ Frequency of use (which may have led to tolerance).
- ◆ Prior experience with the drug.
- ◆ Concurrent use of other drugs.
- ◆ Physical and psychological makeup of the user.
- ◆ "Setting" (environment in which the drug is taken).
- ◆ "Set" (mental condition of the user - happy, depressed, etc.).

Setting and set are important in reducing the incident of "bummers" and "flashback."



## DARK BOTTLE "LIGHT SENSITIVE"

### WHAT ARE "FLASHBACKS"?

"Flashbacks," or spontaneous recurrences of an LSD experience, can occur without warning up to a year or longer after LSD use. The exact mechanism of this effect is not known. Since they occur at times when no LSD is in the body, it has been speculated that they represent a behavior that is learned under the influence of LSD-caused psychophysiologic arousal, that later can be precipitated under conditions of nervous system arousal.

## PHARMACOLOGY OF LSD

The effects of LSD vary according to the amount and how taken. The average period for LSD effects to come on in the use of LSD orally is 45 minutes (15 to 120 minutes). Almost all effects of LSD are gone after 8 - 12 hours. In some cases, 24 hours. Very large doses may produce intense and substantial symptoms for 48 hours. When the drug is swallowed, there is a gradual build-up of physiological symptoms. These consist of numbness, a tingling of the extremities, feeling of chilliness, anorexia, nausea, vomiting (rarely), flushing and dilation of the pupils. These symptoms usually subside by the time the psychic symptoms appear.

LSD produces a pyrogenic (heat producing) effect on the user. The user's ability to control internal body temperature is impaired with toxic doses. The user's body temperature can reach up to 106 degrees. This high temperature, (also known as hyperthermia), if not treated, may cause convulsions and or brain damage.

## "MIND OVER MATTER"

How LSD affects the mind of the user is quite profound. LSD affects the neurotransmitter, serotonin. This neurotransmitter affects sleep, moods, inhibitions, and in some cases, deep depression is experienced. Further, there is a biological filter for stimuli located in the brain. This is called the Raphi Nucleus which is located in the brain stem and transports the sensory stimuli to the appropriate part of the brain. Example: sight to the sight portion, hearing to the hearing portion, etc. LSD causes these cells to shut off, thereby allowing the stimuli to reach the wrong parts of the sensory portion of the brain. This disruption of filters, that sort out information in logical order, results in the inability to segregate memories from reality.