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A Closer Look: How Ecstasy harms

The drug, popular at raves, can make users feel sharp. But that doesn't make it safe.



A teen who attended a rave last month at the L.A. Coliseum died. Ecstasy was in her system. (Barbara Davidson, Los Angeles Times / July 12, 2010)







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By Jill U Adams, Special to the Los Angeles Times

July 12, 2010

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Los Angeles is earning a reputation as a hotbed of raves — those dance parties that sometimes last all night and feature pulsing electronic music, light shows and recreational drugs. In addition to drawing tens of thousands of young people to events, the city's raves have attracted the notice of local and federal public health officials because of the number of emergency room visits that result.

During a two-day event last month at the Los Angeles Memorial Coliseum with an estimated 185,000 participants, some 120 people were taken to local hospitals, many with symptoms of drug intoxication. A 15-year-old girl died with

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the drug Ecstasy, also called MDMA, in her system.

Last New Year's Eve, a Los Angeles Sports Arena rave party with about 45,000 participants resulted in numerous emergency room visits. An investigation by the Los Angeles County Department of Public Health identified 18 of those visits that involved MDMA use, according to a U.S. Centers for

Disease Control and Prevention report published on June 11. A 24-year-old man died at home the next day from multiple drug intoxication, including Ecstasy.

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It's not easy to put numbers on how often Ecstasy causes death — sometimes other drugs are involved, sometimes drug testing isn't done. A study in England, published in the journal Neuropsychobiology in January, studied 605 deaths involving MDMA in the years 1997 to 2007 and estimated that there were 1.67 deaths per 100,000 16- to 24-year-old users.

An estimated 555,000 Americans older than 12 have used Ecstasy in the last month, according to data from the National Institute on Drug Abuse. "My perception is that there was a lot of interest in Ecstasy 15 to 20 years ago and a lot of information and education campaigns," says Jane Maxwell, a drug abuse researcher at the University of Texas School of Social Work in Austin. Yet though illegal, Ecstasy has not gone away, she says; a new generation of young people now is using it. She doesn't see the education campaigns keeping up.

Here's a closer look at the drug Ecstasy.

What is Ecstasy?

Ecstasy is the street name for 3,4-methylenedioxymethamphetamine (MDMA), a synthetic amphetamine that's been around for nearly 100 years. Studies in humans in the late 1970s showed that MDMA acted like an amphetamine-like stimulant and a mescaline-like hallucinogenic drug rolled into one. The drug soon became popular as a recreational drug.

Thirty years ago, some psychotherapists also were using the drug as an adjunct to therapy. They found the drug facilitated talking about difficult issues. Current studies approved by the Food and Drug Administration are testing the drug in combination with psychotherapy to treat post-traumatic stress syndrome.

What does Ecstasy do?

People take the drug to feel mentally stimulated, physically energetic, emotionally positive and to experience a level of enhanced sensory perception. "It seems to have a rather unique capacity for inducing states of empathy — powerful empathogenic experiences, where people feel very bonded," says Dr. Charles Grob, a psychiatrist at Harbor-UCLA Medical Center, who conducted early exploratory tests of the drug in human subjects in the 1990s. "People often have very positive experiences."

However, the drug can also cause nausea, chills and sweating, muscle cramping and anxiety. Physiologically, MDMA increases heart rate and blood pressure and can interfere with the body's hydration level and salt balance. In rare cases, a person on Ecstasy can experience extremely high body temperatures, which can be life-threatening.

Taking a drug at a rave involves additional risk because the quality control of tablets is unknowable. Sometime MDMA is combined with other drugs — rather benign ones, such as caffeine or antihistamines, or potentially dangerous ones, such as methamphetamine or the anesthetic ketamine. Also, the buyer cannot know how much MDMA is in a tablet.

What does Ecstasy intoxication look like?

There's no fail-safe way to know if someone's high on MDMA without testing body fluids. "Most

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people are very calm, quite affable," Grob says. "It's a very, very small minority who, for one reason or another, have a very adverse reaction. Then you know something's going on because they're in medical crisis."

People may get very anxious, or have chest pain or difficulty breathing. Motor coordination may be impaired, or a user may seize or pass out.

How does one die from Ecstasy?

In rare cases, MDMA can cause increases in body temperature so severe it can kill. Scientists don't know precisely why this happens or why some people are susceptible, but the rave setting is a likely contributor, Grob says. Vigorous exercise (such as dancing), hot and poorly ventilated spaces (such as dance halls) and not drinking enough fluids can cause a person's temperature to spike to 105 degrees or more. When that happens, the blood thickens, organs can fail and seizures can occur, all of which can lead to death.

Grob says this condition, known as malignant hyperthermia, is the most common cause of death with MDMA. Other causes, even more rare, are water intoxication and cardiac events.

Water intoxication results from drinking too much fluid; it can lead to dangerously low levels of sodium in the blood. This is ironic, because if kids have heard about the high temperature problem, they may overcompensate by drinking copious amounts of water.

Cardiac arrhythmias or heart attacks can occur with the drug. The MDMA-triggered increase in heart rate and blood pressure can be particularly dangerous if a person has an underlying condition — perhaps unrecognized — with the heart or blood vessels.

Can Ecstasy be taken safely?

Obviously, some people believe that Ecstasy can be used safely — namely, those mental health practitioners who have lobbied to use the drug in their practices. However, the doctor's office is a controlled setting, the medication is a known and uncontaminated amount of drug, and patients can be monitored for adverse effects.

The biggest problem with taking Ecstasy recreationally is that the user can't be sure what's in the pill. A study published in the journal Drug and Alcohol Dependence in 2006 reported on the content of 1,214 tablets sold as Ecstasy between 1999 and 2005. Only 39% of the tablets contained just MDMA as an active ingredient, 15% were mixtures of MDMA and other substances, and 46% had no MDMA at all.

"There are all these other types of crazy drugs," says study author Emily Tanner-Smith, a sociologist at Vanderbilt University in Nashville. "Some of them are over-the-counter drugs used as filler, but a lot of them are potentially problematic drugs" — such as the cough medicine dextromethorphan, other amphetamines and even PCP. "People have no idea what they're getting," Tanner-Smith says.

Some club-drug websites provide information about Ecstasy use, and one — ecstasydata.org — runs a testing service. People can send in pills for content analysis. The site also has a table of pills, with pictures and common street names, plus ingredients. These sites are sometimes accused of being pro drug — taking an approach that's more "If you're going to do drugs, here's what you need to know" than "Just say no" — but they do provide a service to a new generation. "I think it's a good information site," Maxwell says.

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deadtech at 9:04 PM July 12, 2010

What's with the L.A. Times and Ecstasy? One of the least harmful recreational drugs out there. Way less harmful than alcohol! It's even being prescribed to U.S. Veterans for Post Traumatic Stress Disorder.

forparity at 9:17 AM July 12, 2010

Without a doubt, these young people are also doing a lot of alcohol consumption in concert with the ecstasy. While they may not have been able to get it into the concert hall, you can bet that it is going on before and after the concert. They are also smoking a lot of pot in association with the drinking and the pill popping.

I was surprised that a piece like this chose not to touch on the effect that the combination of these drugs and the drinking would have on the body. Certainly, understanding that alcohol also dehydrates the body, one would assume, that this would put the kids in much greater risk.

And of course, they are driving -- in a car -- both to and from the concert in this physical state.

The LA Times Health editor should have reviewed and requested the author to cover the entire subject here, before going to print.

aljaalkash at 6:19 PM July 10, 2010

Substance use is a personal choice. Freedom is really the issue here. The government tells us what we are to do with our bodies all the time; from seatbelts, ending unwanted pregnancies to drug use. The criminal justice system is here to protect us from OTHERS, not ourselves. Freedom is the issue.

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