PUBLIC EDUCATION

# WHAT EVERY AUSTRALIAN YOUNG PERSON NEEDS TO KNOW ABOUT

# Ecstasy Deaths

DRUG FREE AUSTRALIA

Coalition of Alcohol and Drug Educators

Dalgarno INSTITUTE



Anna Wood (left) was Australia's first death from ecstasy in 1995. She was aged 15 when she died.

Anna died from a single ecstasy pill, which had no impurities or adulterants. Four friends took pills from the same batch but did not die.

Her father Tony (right) has worked for years educating young people about the dangers of ecstasy, and leads this campaign to educate Australian young people about the real causes of ecstasy deaths.

# What causes ecstasy deaths?

Most ecstasy deaths involve hyperthermia where the body heats above 40 degrees Celsius, causing organ shutdown and death.

## Idiosyncratic vulnerabilities

Many die from idiosyncratic vulnerabilities to MDMA (ecstasy) where some individuals' inability to metabolise ecstasy appears to cause their deaths. As with Anna Wood, Australia's first ecstasy death in 1995, she bought ecstasy tablets along with four friends but only she died. There were no deadly impurities in her tablet, nor other drugs mixed with the MDMA. It was ecstasy alone that killed Anna and ecstasy alone that was directly responsible for 23% of all Australian MDMA-related deaths between July 2000 and June 2005, and for 14% of all MDMA-related deaths between July 2000 and November 2018 (see Roxburgh study below). Many die from very small doses of ecstasy – for instance New Zealand's first fatality from ecstasy in 1998 had blood concentrations showing she only had a fraction of a pill.

## Ecstasy taken with other legal and illegal drugs

Polydrug use, where ecstasy is consumed along with alcohol, cocaine, amphetamines etc caused 48% of the 392 MDMA-related deaths between 2000 and 2018.

Alcohol is known to interfere with the metabolism of MDMA, leading to higher MDMA blood concentrations. Methamphetamine, like ecstasy, causes hyperthermia, and when taken together can cause deaths from its complications. Most deaths are from users taking ecstasy with other legal or illegal drugs.

## Accidents resulting from ecstasy intoxication

29% of all MDMA-related deaths between 2000 and 2018 were from fatal accidents deemed by coroners to be caused by ecstasy (see Roxburgh study below). While accidents such as drowning cause only the death of that ecstasy user, car accidents can cause the deaths of other occupants of their vehicle, or occupants of other vehicles hit by an intoxicated driver. Most of the deaths from accidents involved vehicles.

## Unpredictability of ambient temperature and social context

Making ecstasy use entirely unpredictable, scientific studies with rodents show that changes in social context and ambient temperature cause deaths. Rats given one fifth the lethal dose of MDMA exhibit brain temperature increases when merely put into a social situation with other rats, but when this was combined with an increase in ambient temperature from 22 degrees to 29 degrees Celsius, which rats would normally tolerate well, all rats died from hyperthermic overheating. This may explain why experienced ecstasy users die taking identical pills on differing occasions.

## Pill testing does not identify these causes

Pill testing will not be able to identify whether you have an individual vulnerability to ecstasy – it is not a property found in a pill. Likewise polydrug use – using ecstasy with other legal or illegal drugs – is not a property found in a pill. Accidents from intoxication cannot be identified in a pill. Higher ambient temperatures and vibrant social situations are not properties of a pill. None of these real causes will be identified by pill testing.

The problem with pill testing is that it will make young people think that it makes ecstasy safer to use. It doesn't. At the very least, 95% of pill deaths in Australia between 2000 and 2018 were from ecstasy itself, either as a direct or contributing cause of death.

## In Australia, deaths not from contaminants, and rarely from adulterants

Of 392 MDMA-related deaths between 2000 and 2018, there were no deaths from contaminants or impurities in ecstasy pills. This is one of the major rationales for pill testing, but it has not happened.

There were very few deaths from pills where ecstasy was mixed with another drug in a pill. 3% of deaths were from ecstasy mixed with PMA, and another 3% from a variety of other exotic drugs mixed in with ecstasy. Yet Pill Testing Australia's equipment would not have identified the complex mix of MDMA, 4-FA and 25c-NBOMe of three of those deaths (as advised by South Australian toxicologist Dr Andrew Leibie) which were in Melbourne in 2017, most likely identifying the pills as ecstasy only, thereby not being capable of preventing those deaths.

Thus pill testing at best may have prevented up to 5% of the 392 deaths between 2000 and 2018, but would not have prevented the 95% of deaths caused by ecstasy. No government would ever contemplate funding a service with a prevention rate of less than 5%.

## And ecstasy overdose is rare

Scientific studies demonstrate that ecstasy overdose is rare. What is more, Harm Reduction Australia (HRA), which auspices Pill Testing Australia, is part of an international network of "harm reduction" organisations such as the Drug Policy Alliance and Dancesafe which readily acknowledge that ecstasy overdose is rare even if HRA dishonestly refuses to admit it. So almost all deaths from ecstasy, by extrapolation, are from normal recreational doses of ecstasy. This is backed by the Australian science on MDMA-related deaths.

## Pill testing can't advise any appropriate dose

Pill Testing Australia is now calling for governments to buy them new equipment that can measure the purity and dose in an MDMA pill, saying they need to advise users on how to more safely moderate their doses.

Given that every person metabolises the MDMA in their ecstasy pill differently there will be blood concentrations which will differ tenfold for roughly the same amount of MDMA taken. Because of this wide variance in individuals, advice on appropriate dosing makes no sense.

*(For the more scientifically-minded)*

A graph displayed below from a South Australian study shows the blood MDMA concentrations for 49 ecstasy users, NONE of which died in the study, against the amount of carefully measured MDMA they ingested.

The light blue shaded area in the graph shows the blood concentration range for 196 of the 392 MDMA-related Australian deaths (the lower 50%) between 2000 and 2018. As can be clearly seen when viewing it, even small doses of MDMA (80-90 mgs which is towards the bottom of the range currently found in a single ecstasy pill) yield blood concentrations well ABOVE the levels which caused 50% of our Australian ecstasy deaths. Ingestion of just 100-115 mg (a very standard dose of MDMA for a single pill) of ecstasy gives blood levels ranging tenfold (from 120 – 1040 ng/ml). When it is considered that 125 – 150 mg of ecstasy can be routinely used for experimental PTSD research with no ethics approval problems, such individual differences against toxic levels again makes advice on dose absurd.

Festivals do not need pill testers advising on dose. All that is needed is a large photo of someone who died from ecstasy captioned – "this ecstasy user died after taking ¼ of a pill".

Messages on what to look for when someone is hyperthermic or toxically affected by ecstasy can be delivered via all sorts of social media and screens at festivals. Pill testing is highly unlikely to save your life.

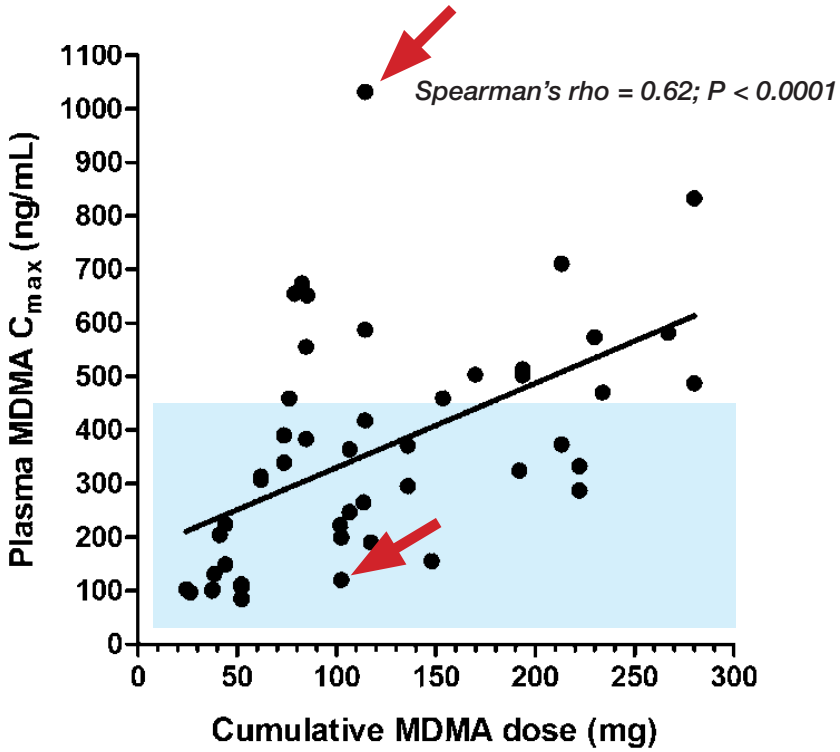


***Figure 4:*** *The relationship between maximum plasma 3,4-methylendioxymethamphetamine (MDMA) concentration (Cmax) and cumulative MDMA dose consumed by the time of maximum plasma concentration (n = 49). Correlation coefficient (Spearman's rho), P-value and line of best fit are shown (n = 49 participants where MDMA detectable in plasma)*


DRUG FREE AUSTRALIA URGES PARENTS OF YOUNG PEOPLE AGED 15-26, THE MOST VULNERABLE GROUP FOR ECSTASY DEATHS, TO SHARE THIS INFORMATION WITH OTHER PARENTS VIA SHARING THIS WEBSITE OR BY DIRECTING THEM TO OUR FACEBOOK WhatcausesEcstasydeaths PAGE, AND FOR YOUNG PEOPLE TO SHARE IT VIA THEIR SOCIAL MEDIA

ecstasy deaths

# Red Card

# FOR THE KILLER CAMPAIGN

Drug Free Australia and the Dalgarno Institute are sponsoring a national campaign calling out Pill Testing Australia for failing to red-card in both Canberra trials the very substance responsible for almost every Australian party pill death.

Whenever a substance or drug was identified in a pill that Pill Testing Australia considered to be "associated with increased harm/ multiple overdoses/death" it classified that pill with a red card (see in 'Background Information' below).

Yet an important study of 392 Australian MDMA-related deaths between 2000 and 2018 (see also copied below) found that it was either ecstasy itself, or ecstasy co-consumed with alcohol, cocaine, amphetamines etc that caused each death. No deaths from dangerous impurities or contaminants, and very few from other synthetic drugs mixed with MDMA in pills. A majority of deaths were from normal recreational doses of ecstasy, not overdoses (read more on this below).

In Canberra, seven pills containing N-ethylpentylone were given red cards, most likely from a batch of 200+ that caused no deaths elsewhere. Yet Pill Testing Australia refuses to give ecstasy, which in 2019 was in 90% of the 158 pills tested in Canberra, a red card despite it demonstrably exceeding their own criteria of "increased harm" and "death".

Please e-mail Gino Vumbaca gino@3vc.com.au, President of Harm Reduction Australia (HRA)/Pill Testing Australia, to register your indignation about their failure to red-card Australia's chief killer. And once ecstasy is red-carded, there is little point to pill testing – at most 5% of Australian deaths in 18 years have been caused by other drugs (identifiable by their pill testing equipment) mixed in ecstasy pills, and no government would ever fund an intervention with only a 5% prevention rate. And their claimed counseling of patrons on the dangers of ecstasy clearly doesn't work with not one user observed discarding their identified ecstasy in Canberra.

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## CALL HRA'S PILL TESTING AUSTRALIA TO ACCOUNT NOW.

# Ecstasy responsible for all 392 MDMA-related deaths between 2001 and 2016 (see p 18)

## MDMA-related deaths in Australia

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**Introduction**: There are an estimated 22 million users of 3,4-methylene-dioxymethamphetamine (MDMA, 'ecstasy') worldwide. Increased manufacture, purity and prevalence of MDMA use in many regions internationally is of concern as the drug is associated with a range of harms. MDMA is typically used by young adults and generally considered to be a safe drug. Fatal effects, though rare, include hypertension, hyperthermia, cardiac arrest, and an elevated risk for traumatic injury and suicide. Many MDMA deaths involve concomittant use of other drugs.

**Aims:** This presentation provides evidence on:
1. MDMA-related death rates in Australia 2001 to 2016,
2. The characteristics and circumstances of MDMA-related death, and
3. The toxicology of MDMA-related deaths.This presentation provides evidence on:
1. MDMA-related death rates in Australia 2001 to 2016,
2. The characteristics and circumstances of MDMA-related death, and
3. The toxicology of MDMA-related deaths.

**Methods:** *Design:* Analysis of cases of MDMA-related deaths extracted from the National Coronial Information System.
*Setting:* Australia.
*Cases:* All cases where MDMA was considered by the coroner to be contributory to death.
*Measurements:* Information was collected on cause and circumstances of death, demographics and toxicology.

**Results:** 392 deaths were identified, with a median age of 26 years and 81% being male. Females were significantly younger than male cases (24 v 27 years). The underlying cause of death was attributed to: i) MDMA toxicity alone (n=55), ii) multiple drug toxicity (189), iii). Other causes (n=148: traumatic accident 115, suicide 23, disease 10). Death rates increased significantly between 2001-2007, declined between 2008-2010, and increased again between 2011-2016. The median MDMA concentration was 0.45mg/L, and was significantly higher amongst females than males (0.70 v 0.42mg/L). Deaths attributable to MDMA toxicity alone had a significantly higher blood MDMA concentration than multiple drug toxicity deaths (1.20 v 0.43mg/L). Drug toxicity cases had significantly higher blood MDMA concentrations than cases where death was due to other causes (0.59mg/L v 0.30mg/L). Other drugs detected in addition to MDMA included psychostimulants (54%), alcohol (43%), opioids (30%), cannabis (25%) and benzodiazepines (23%).

**Implications:** MDMA-related deaths occurred predominantly among males aged in their mid twenties, with females likely to be significantly younger. Three marked periods of trends in death rates (increases and declines) were observed, consistent with the international MDMA supply trends. While most deaths were due to multiple drug toxicity, a notable proportion were attributed solely to MDMA toxicity.

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Research Paper

## MDMA-related deaths in Australia 2000 to 2018

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ABSTRACT

*Background:* MDMA markets have undergone substantial changes internationally, with increasing manufacture of high purity MDMA recorded. This study examined trends in MDMA-related deaths in Australia, investigating characteristics, circumstances and toxicology of these deaths.

*Methods:* Analysis of MDMA-related deaths in Australia between 2001 and 2018, extracted from the National Coronial Information System (NCIS). Deaths were categorized into (1) drug toxicity deaths, where MDMA (with and without other drug) toxicity was considered by the coroner to be the underlying cause of death; and (2) other cause deaths, with MDMA (with and without other drug) intoxication/toxicity considered contributory to death.

*Results:* 392 deaths were identified, with a median age of 26 years. 81% were male. Females were significantly younger than males (24 vs. 27 years). Two-thirds (62%) of deaths were attributed to drug toxicity (48% multiple drug toxicity and 14% MDMA toxicity alone), and one third (38%) to other causes (predominantly motor vehicle accidents) with MDMA recorded as a contributory factor. Death rates increased significantly between 2001 and 2007, declined between 2008 and 2010, and increased again between 2011 and 2016. Median MDMA concentration was 0.45 mg/L, and was significantly higher amongst females than males (0.70 vs. 0.42 mg/L). Deaths attributable to MDMA toxicity alone had a significantly higher blood MDMA concentration than multiple drug toxicity deaths (1.20 vs. 0.43 mg/L).

*Conclusions:* Deaths occurred predominantly among males in their mid-twenties, with females likely to be significantly younger. Three marked periods of trends in death rates (increases and declines) were observed, consistent with international supply trends. While most deaths were due to multiple drug toxicity, a notable proportion were attributed solely to MDMA toxicity.

# Pill Testing Australia's classification system

Below is a screenshot from page 11 of their evaluation – compare page 9 of their second evaluation which shows they used the same classifications.

**Diagram 3: Classification and reporting of detected substances**

| | |
|---|---|
| WHITE: | Where a substance was analysed, and was the same as what the patron anticipated that it might be |
| YELLOW: | Where a substance was analysed, and there was a significant disparity between the result and what the patron anticipated that it was |
| RED: | Where a substance was analysed, and revealed the presence of a substance known to be associated with increased harm / multiple overdoses/ death<br>Where a substance was analysed and returned an ambivalent result, or functional groups known to be associated with significant harm |

The white card assigned to samples where MDMA was the only psychoactive substance identified signals by default that ecstasy is NOT "a substance known to be associated with increased harm / multiple overdoses / death" according to their red card description displayed above.

This can only increase the likelihood that more ecstasy will be consumed as a result of pill testing – precisely what was found by the evaluation conducted by the Australian National University. It states that "most of the patrons had a generally accurate perception of the contents" of their pills before testing, but also states that "those who received a test result confirming the substance to be what they thought it was ***were likely to take as much or more than originally intended***" and "concordance between expectation and identification is associated with ***stable or increased intention to take a substance.***"


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