

**OPENING THE CASKET: AN ANALYSIS OF ALCOHOL AND
HEROIN OVERDOSES - MYTHS, MISATTRIBUTIONS,
AND MISUNDERSTANDINGS.**

by

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B.A., Simon Fraser University, 1993

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REQUIREMENTS FOR THE DEGREE OF
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OPENING THE CASKET: An Analysis of alcohol and heroin
overdoses - myths, misattributions, and misunderstandings.

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ABSTRACT.

This study provides a comprehensive look at the heroin and the alcohol overdose in British Columbia by analyzing reports completed by the coroner and the toxicologist. In total, 1029 drug toxicology reports (representing approximately 95% of all overdose deaths that occurred between 1984 to 1993), and 30 coroner's files (randomly selected from the last three years of the study) were analyzed. The toxicology reports provide a comprehensive portrait of the kinds of drugs in decedents at the time of their death, and their concentrations; accordingly, a pharmacological understanding of these deaths is provided. An analysis of the coroner's files increases our understanding of these deaths further, by drawing attention to the context of drug consumption, including the individual, social, economic, and medical factors associated with it. Similar findings have been reported by several researchers, both in North America and in Europe; these are also reviewed. Together, these data suggest that a policy of criminalization has dramatically increased the dangers of heroin, including the risk of overdose.

DEDICATION.

For Mom, Dad, Wes, Gordon, Inez, soul guides;
and Eduardo, soul mate.

QUOTATION.

Read My Lips

Silence is my oldest friend
My hands have learned to fly
My ears are full of rushing wind
And I'm hearing with my eyes
But the talking world don't listen
And the hearing world is blind
They keep giving me directions
When they cannot read my signs
In school I learned to be ashamed
They tried to train my tongue
To shape the words I'd never heard
And to keep my fingers dumb
To blend in with that talking world
To read those busy lips
Oh but my heart ached for the poetry
Of my dancing fingertips
And a hand that can talk can make a fist
A hand can learn to spell resist
My silence does not mean consent
If you don't get it - read my lips

Now to make a little uproar
You don't have to make a noise
And to spell out your position
Takes some guts - but not a voice
They can argue they can criticize
Negotiate or stall
But our signs are making headlines
And the writings on the wall
Now you thought we'd knuckle under
You thought we'd buckle down
But you can feel the rising thunder
If your ear is to the ground
It's a whole new conversation
Eye to eye and hand to hand
We'll build a new vocabulary
That we all can understand

*And a hand that can talk can make a fist
A hand can learn to spell resist
There's signs of hope, there's signs of change
Signs that words cannot explain
Signs like pictures without frames
Waiting at your fingertips
Then I won't have to read your lips
If you don't get it - read my lips!*

- Betsy Rose

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CHAPTER ONE: INTRODUCTION

The Opiates Prior To Criminalization.

The goal of this study is to present a comprehensive portrait of the nature and causes of overdoses attributed to legal and illegal drugs. These deaths occurred in B.C. between 1984 and 1993. Legal drug overdoses refer to deaths officially attributed to alcohol, our favorite intoxicant in North America; illegal drug overdoses refer to deaths officially attributed to heroin, the most feared of all illegal drugs. Alcohol overdoses remained relatively stable in the province between 1984 and 1993 (hovering between 32 and 47 deaths annually), while heroin overdoses have climbed dramatically. In 1984, 13 deaths were attributed to heroin; by 1993, more than 300 were (see *figure 1*). This represents an increase of more than *twenty three-fold*. Nonetheless, an analysis of reports completed by coroners and toxicologists indicates that alcohol can be as dangerous (and frequently *more* dangerous) than heroin. This is because the dangers associated with these drugs -- including the risk of overdose -- are not intrinsic to them. Rather, they are a consequence of the *context* of consumption: most alcohol and heroin overdose subjects were poor, had an extensive history of drug abuse, and were suffering from several medical conditions -- all factors that increase the odds of fatal intoxication. My findings also suggest that a policy of criminalization, rather than decrease the dangers associated with heroin, have increased them -- significantly.

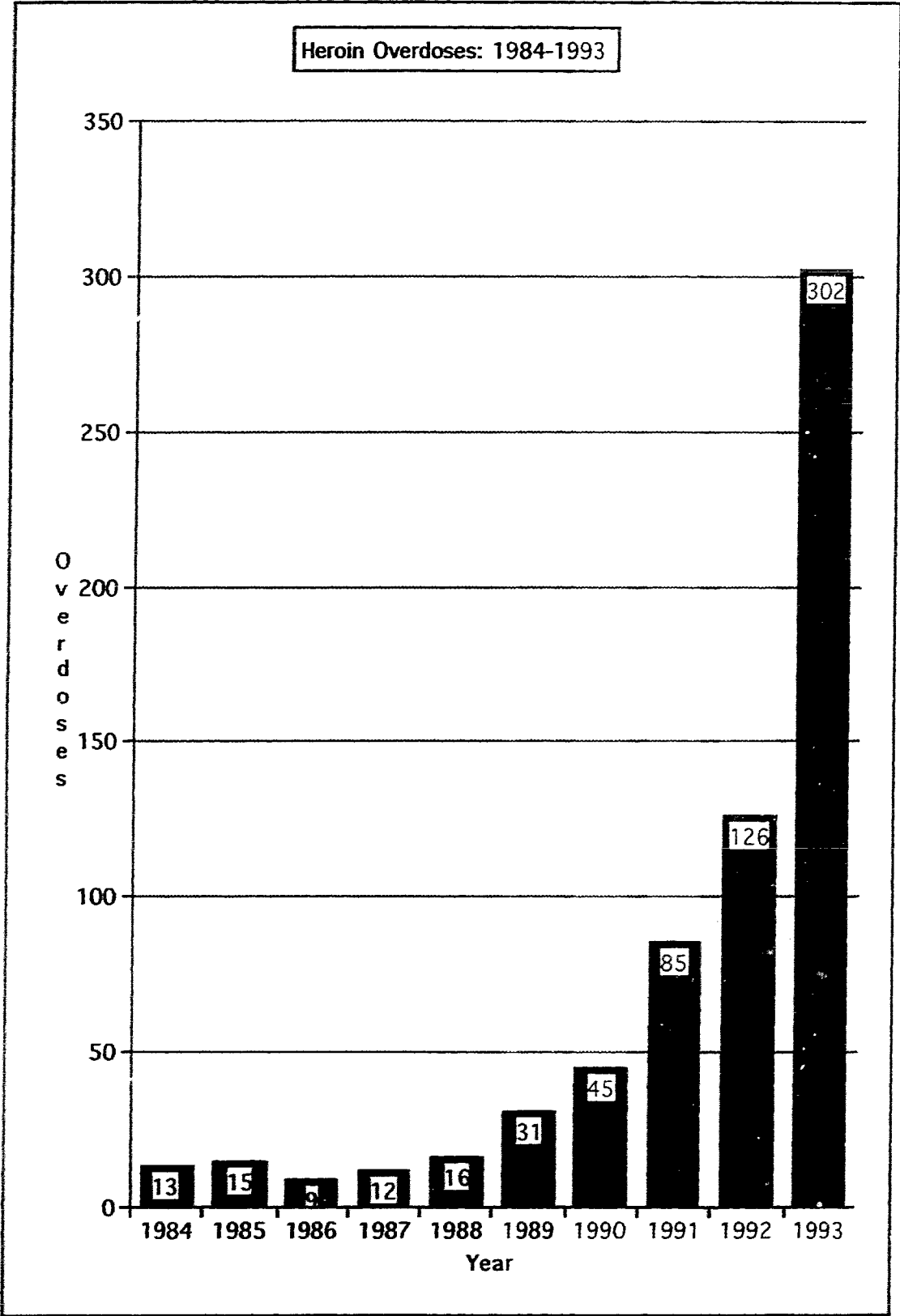


Figure 1

The use of opium, from which both morphine and heroin are derived, dates back at least as far as 7,000 B.C. to the ancient Sumerians, who described it in very positive terms. An ancient Sumerian ideogram of the opium poppy has been translated to mean "joy" or "rejoicing" (Lindsmith, 1965: 207). Opium was also highly regarded by the ancient Assyrians, Egyptians, and Greeks -- both as a social lubricant and as treatment for a variety of ills, including pain, asthma, coughs, jaundice, and menstrual cramps (Conrad & Schneider, 1980). In fact, opium was so highly regarded in the ancient world that the 2nd century physician Galen, known as "the last great Greek physician", argued that the drug was a medical panacea (Conrad & Schneider, 1980: 111).

The Romans adopted the use of opium into their diets after conquering the Greeks, using it in much the same way as they did, for recreation and as a medicine. By the fall of the Roman Empire (circa 6th century A.D.), opium use was widespread all across Europe, a testament to the enormous cultural influence of the Romans. Paracelsus, the famous 16th century Swiss physician, also regarded opium as a panacea for a host of human ailments, calling it the "stone of immortality" (Conrad & Schneider, 1980: 112). Coleridge acknowledged that his famous poem, "Kubla Khan", originated from a dream under its influence. Other English literary figures, including John Keats, Elizabeth Barret Browning, and Charles Dickens, as well as their French counterparts, Baudelaire, de Nerval, and Victor Hugo, were also opium users (Lee & Shlain, 1992).

While opium had been in widespread use throughout Europe since the time of the Romans, it did not become popular in North America until the 19th century. This is when it became available over the counter in drug and grocery stores, and by mail order, contained in various tonics and elixirs (Brecher, 1972; Musto, 1973). Marketed under names such as Ayer's Cherry Pectoral, Mrs. Winslow's Soothing Syrup, and Godfrey's Cordial, these concoctions were advertised as pain killers, cough mixtures, and even as "soothing syrups" for teething infants (Brecher, 1972). It is not at all surprising that they became very popular in the New World: physicians began portraying them -- just as their medical counterparts did centuries earlier -- as if they were "God's Own Medicine" (McWilliams, 1993). Opium could also be smoked; this form of use was confined mostly to the Chinese.

Modern Refinements: introducing morphine and heroin.

It was after the introduction of derivatives of opium -- morphine and heroin -- that problems associated with the use of opiates emerged. Before this there does not seem to be any evidence of widespread addiction or problems associated with use (Conrad & Schneider, 1980; Duster, 1970). One of the reasons is likely pharmacological: morphine is about 10 times as potent as opium, while heroin is at least three times as potent as morphine. While considerably more potent than morphine, heroin quickly breaks down (metabolizes) into morphine after injection (Weil & Rosen, 1983).

After the invention of the hypodermic syringe in 1853 morphine became even more dangerous. Administered intravenously, it is delivered into the blood

stream far more quickly than by tonics or elixirs. As a result, the drug's effects are considerably more pronounced. The world's first morphine addict was the wife of the man who invented the hypodermic syringe (Weil & Rosen, 1983: 82). Intravenous injection also increased the medical uses of morphine, and soon "[m]edical journals of the day were replete with glowing descriptions of the effectiveness of the drug" for many of the health complaints treated by physicians in the ancient world (Cloyd, 1982: 21). Anecdotes gleaned from the notebooks of 19th century physicians suggest that the majority of users of this period were "literally recruited into addiction, albeit unintentionally, through the liberal and careless use of opiates in medical treatment" (Conrad & Schneider, 1980: 114). With few other drugs available, physicians tended to rely on the opiates. A report to the Iowa State Board of Health in 1885 made the point that:

The habit in a vast majority of cases is first formed by the unpardonable carelessness of physicians, who are often fond of using the little syringe, or relieving every ache and pain by the administration of an opiate (Hull, 1885/1974, cited by Conrad & Schneider, 1980: 114).

Morphine and heroin were even touted as cures for alcohol addiction. As Weil & Rosen (1983: 84) report, "the physical consequences of long-term narcotics use are minor compared to those of alcohol". A 19th century physician put it this way:

I decided these symptoms [acute gastritis, jaundice, liver trouble, and possibly heart disease] were due to overuse of alcoholic drinks, and that an alcoholic cirrhosis was developing. The subject would not drink whiskey when he had morphine, and as he already had a habit for morphine I decided that by prescribing morphine for him he would get along better (Cited by Brecher, 1972:10).

These comments are as true today as they were then. Provided heroin has not been adulterated by the black market, and that the user maintains good habits of hygiene and nutrition, addiction to the drug is typically *not* associated with serious social and medical problems common to the "junkie" of the 20th century. Brecher (1972) reports that substituting morphine (and later heroin) for alcohol seems to have helped many alcoholics switch from a drug that is physically toxic when used habitually to one that is not. It seems it is not heroin *per se* that leads to problems for users, it is heroin under 20th century conditions of illegality (Alexander, 1990; Boyd, 1993; Krivanek, 1988; Nadelmann, 1987; Trebach, 1993; Weil & Rosen, 1983).

While opium smoking was the first form of an opiate to be criminalized, its dangers are less than those associated with either morphine or heroin. Smoked opium is typically less potent than either i.v. morphine or heroin consumption; users can titrate (or regulate) the dose being consumed. Despite widespread availability, it is estimated that only about 1% of the population became seriously addicted to any of the opiates in the 19th century (Alexander, 1990). This fact seems to have been missed by most advocates of criminal prohibition.

The contemporary distinction made between legal drugs such as alcohol, and illegal ones, such as heroin, is not based upon pharmacology or science; rather, this distinction is rooted in religious doctrines, economics, and racial fears that have very little to do with the actual harms associated with the use of these drugs (Boyd, 1993; Mitchell, 1991; Szasz, 1975; Trebach, 1993: 24). Nonetheless, most people believe heroin to be the prototypical dangerous

drug. This is due, in large part, to the continued propagation of a mythology about heroin use, as well as a misleading stereotype of the typical heroin user.

The Emergence of Criminal Sanctions Against Opiate Use.

Laws proscribing opiate use were based upon a mythology about the drug, and its users. Both structural factors and individual agency help explain how this mythology arose. Structural factors include a major economic downturn, widespread racial hostility, and the influence of a major Moral Reform Movement. Individual factors include moral entrepreneurs, such as Mackenzie King and Emily Murphy. A stereotype that defined opiate (and later heroin) use as socially, morally, and physically reprehensible, and thus in “need” of criminal prohibition, emerged in the context of these conditions.

19th century Canada was evolving from a largely rural, lightly populated, commercial society, into an urban, more populated, industrial society. Men came to the frontier for the opportunity to participate in the Gold Rush, as well as to engage in logging, mining, and railroad construction. The enormous number of men who journeyed to the frontier for employment produced a highly unbalanced sex ratio, which encouraged “an episodic lifestyle in which hard labour under primitive living conditions alternated with periods of hedonistic enjoyment” -- including the habitual use of alcohol and the opiates (Giffen et al., 1991: 46). The “work hard -- play hard” attitude seems to have been popular. Soon, however, increasing numbers of “respectable” elites (e.g. businessman, and religious leaders) began settling in these areas

promoting an ethos of hard work, virtue, and civic responsibility. The “hedonism” of the first settlers was soon seen as a vice, inimical to the stability of the settlements, and most importantly for these reformers, Christian morality.

Reform Movements

Thus, the first factor important to understanding the emergence of anti-narcotic legislation in Canada is the success of a major Moral Reform Movement. The Movement emerged in the 19th century led predominately by fundamentalist and evangelical Protestant clergymen, most of whom were middle class, and white (Giffen et al., 1991; Kinney & Leaton, 1991). These “moral entrepreneurs” (Becker, 1963) envisioned a harmonious world plagued by sickness, crime, violence, alcohol, and drug abuse -- and sought to eliminate these problems through law and social reform.

Economics

The second factor important to understanding the emergence of this legislation is the economic backdrop. The 19th century gave birth to industrialism, and jobs became very plentiful; in fact, for many years there were more jobs available than there were employees to fill them. As a result, when “Canadian industrialists came looking for cheap labour to build the industries of western Canada, they came to China, offering labourers about ten times the amount they could earn for comparable work at home” (Boyd, 1993: 6). Some brought the practice of smoking opium to western Canada, a pastime initially regarded

as nothing more than an unpleasant -- yet certainly tolerable -- habit. "[T]olerance for the habit of smoking opium lasted only as long as British Columbia's tolerance for the Chinese" however (Boyd, 1993: 27).

Racial Fears

When the Chinese first began to settle in frontier towns in numbers (during the middle of the 19th century) neither their habit of smoking opium, nor their culture were seen as a problem. As the number of Chinese increased, however, and competition for jobs escalated, fears of an "alien invasion" became common (Comack, 1991). The economic boom that characterized the mid-1800's soon waned, and by the late 1890's, the Chinese -- initially seen as a labour asset to the burgeoning economy -- were resented. This resentment eventually prompted the Vancouver Trades and Labor Council to form the Asiatic Exclusion League (A.E.L.), whose goal was to reduce the political and economic power of the Asian minority (Comack, 1991; Giffen et al., 1991). The group successfully lobbied for "head taxes" (lump sum payments Asian immigrants had to pay in order to gain access to Canada) and were also influential in having the *Franchise Act* amended to bar "any person of Mongolian or Chinese Race" from voting in a federal election. (Cited by Giffen et al., 1991: 54). Anti-Asiatic sentiment in the U.S., and attention to the Chinese habit of smoking opium, increased when the economic situation worsened there as well (Cloyd, 1983).

The Media

While initially the Chinese and their habit of smoking opium attracted little public attention, by the early 1900's the media began portraying them as an alien group, with an "evil" addiction to smoking opium. Opium smoking was seen as an intolerable habit, threatening the cultural and moral "superiority" of the dominant white-european way of life. Judge Emily Murphy wrote a series of articles for *Macleans Magazine*, later collated and published as *The Black Candle*. While Murphy approached the phenomenon of drug use with genuine concern, marshaling "significant social, medical, statistical and pharmacological data ... her style tended more to sensationalist rhetoric than impartial reportage" (Green, 1986: 31). It was also racist.

Murphy argued that "there is a well-defined propaganda among the aliens of color to bring about the degeneration of the white race" through spreading the "evil" habit of smoking opium (Cited by Green, 1986: 32). A "moral panic" (Cohen, 1980) emerged. Murphy's book, and several magazine articles written for *Macleans Magazine*, played upon the latent fears of the Chinese, and other racial minorities. She seems to have been especially concerned about the fate of white women, arguing that in the Chinese opium dens "the seduction of women addicts becomes easy ... Under the influence of the drug, the women loses control of herself; her moral senses are blunted, and she becomes a 'victim' in more senses than one" (Cited by Giffen et al., 1991: 152). The *Black Candle* shows a picture of a black man lying on a bed next to a white women with an opium pipe between them. The caption beneath the picture reads: "When she acquires the habit, she does not know what lies

before her, later she does not care”.

Murphy, who seems to have represented the views of many in authority at the time, proselytized that opium use inevitably led to “moral degeneration, crime, physical and mental deterioration and disease, intellectual and spiritual wastage, and material loss through drug-induced negligence” (Green, 1986: 31). This set of beliefs -- known as the “dope fiend mentality” -- became rooted in the popular imagination, despite lack of sound medical or scientific support. Even Sir Matthew Begley, the Chief Justice of B.C., was ignored when he attempted to counter the emerging drug ideology. He reported that:

I altogether disbelieve in any widespread mischief here from opium ... If any Chinese here abused the drug by over-indulgence, they must hide themselves, or at all events they have entirely escaped my observation ... Opium, as generally used here is probably as harmless as tobacco, which is also extensively used in British Columbia ... Neither opium nor tobacco extend in their evil evil effects beyond the individual. They are not so dangerous to the public peace as whiskey ... All the evils arising from opium in British Columbia in a year do not, probably, equal the damage, trouble, and expense occasioned to individuals and to the state by whiskey in a single month, or perhaps in some single night (Cited by Giffen et al., 1991: 58).

The Existential Reality of the Dope Fiend Stereotype.

Many Asians, being poor, settled alongside other economically marginalized groups in the low rent districts of the province. In some places the areas resembled ghettos, the same places immigrant Asians settled in the U.S. (Cloyd, 1983). Public health is typically very poor in these areas (Jones et al., 1988). The character of many opium den patrons helps explain the (mis)attribution of several social problems to opium -- and the subsequent

emergence of the dope fiend mentality. Many opium den habitues suffered from poor health; however, beyond the dangers associated with ingesting smoke, none of these health consequences result from the opium. Pharmacologically the opiate family of drugs is remarkably safe. Opium use does not lead to any permanent physiological or mental deterioration (Alexander, 1990; Krivanek, 1988). The dens were often in the back rooms of Chinese shops in the inner cities, hiding them from the police and the population at large, making them "a kind of vagabonds' inn, a friendly and safe refuge for itinerant salesman and actors, as well as for underworld characters" (Blackwell, 1988: 232). It seems the character of the opium den *patron* -- not the opium -- was the real target of concern.

The dope fiend mythology, as Alfred Lindsmith noted more than half a century ago, is "a body of superstition, half-truths and misinformation which bolsters up an indefensible repressive law, the victims which are in no position to protest" (Cited by Giffen et al., 1991: 149). The dope fiend mythology became popular because it played upon anti-Asian sentiments, and was based upon a very small kernel of truth: police proclamations about gambling and other criminal activity *associated* with the opium dens were true. Police -- who provided the information Emily Murphy used to write her articles -- were also frustrated by their inability to penetrate the tight knit Asian community. Cultural and language barriers made gathering information on these activities difficult (Giffen et al., 1991). The historical record suggests that opiate users became a scapegoat for a number of social, economic, racial, and criminal problems. Some physicians, acknowledging the gambling, and other activity associated with opium, attempted to put these activities into perspective, to offer a more

reasonable explanation, and to refute the exaggeration and distortion of moral entrepreneurs like Emily Murphy. One doctor noted that:

I do not know of hundreds of men and women lost by the use or abuse of opium. I know perfectly well some few gamblers use opium. I know perfectly well some few women use opium. I think these cases are very few, and very few have come professionally before me ... I am certain the allegation is a vile, malicious fabrication of the habit of smoking opium (Cited by Giffen et al., 1991: 59).

Nevertheless, the media and the police argued that opium was the "Chinese evil", that it caused crime and other serious social and medical problems. And, with very few exceptions these claims met with little resistance. The social and economic situation of many opium den patrons meant they were unlikely to be effective at convincing influential moral entrepreneurs about the true pharmacological characteristics of opium. The few prominent citizens that did speak out seem to have been ignored.

Because many opium den habitues were socially and economically marginalized, it became easy to argue that the opium *caused* these conditions. It was also convenient. The late 19th century was characterized by increasing economic insecurity and racial tension, conditions that helped the white, Euro-Canadian majority latch onto the dope fiend mythology. Similar social and economic conditions helped lead Americans to believe in the myth of the "black cocaine fiend".

The Myth of the Black Cocaine Fiend

The U.S., like Canada, was in an economic downturn during the latter part of

the 19th century, and, as in Canada, this insecurity helped to stir racial tensions. The consequences of hundreds of years of black oppression were also beginning to be felt. The Klu Klux Klan, and others who felt threatened by the rising black consciousness, responded with lynchings and other forms of "frontier justice" (Weisbrot, 1991). These tensions also helped lead to an incredible array of laws designed to reduce the political and social power of blacks, just as similar tensions caused Canadian lawmakers to enact laws to stifle the social and political power of the Chinese. As one writer notes:

The mushroom growth of discriminatory and segregation laws during the first two decades of this century piled up a huge bulk of legislation Up and down avenues and byways of Southern life appeared with increasing profusion the little signs: "Whites Only" or "Colored" ... over entrances and exits, at theaters and boarding homes, toilets and water fountains, waiting rooms, and ticket windows In many crafts and trades the written or unwritten policies of Jim Crow¹ unionism made segregation superfluous by excluding Negroes from employment [Another method of segregation] designated blocks throughout [a] city black or white according to the majority of the residents and forbade any person to live in any block where the majority of residents on such streets are occupied by those [of a different race].(Woodward, 1957, cited by Cloyd, 1982: 35).

One of the most common beliefs at this time was the myth of the "black cocaine fiend" -- a black man driven to do unspeakable things while under the influence of cocaine. Police officers, particularly those in the southern states, argued that cocaine drove black men "wild", made them prone to crime, improved their pistol marksmanship, and completely resistant to bullets. The .32 calibre bullets were thought to be ineffective against the black man, causing several police departments to switch to .38 calibre bullets (Musto,

¹ The name Jim Crow, taken from the caricature of a black minister (circa 1830), refers to "day-to-day segregation of whites and blacks" (Burch, 1993: 121). These laws were in effect in southern American states from the 1890's to the 1960's

1973). One U.S. Congressman argued that “the use of cocaine by the negroes of the South is one of the most elusive and troublesome questions which confront the enforcement of the law in most of the Southern states” (Cited by Cloyd, 1982: 53). The fear that black men under the influence of cocaine were more likely to rape white women also became part of the emerging dope fiend mythology; it was suggested that the uncontrollable desire for cocaine among blacks helped to unleash their allegedly inherent bestial forces of lust and rage (Cloyd, 1982: 31). These beliefs, while erroneous, were even propagated by the American Pharmaceutical Association.²

Both the myth of the “Black cocaine fiend”, and the myth of the “Chinese dope fiend”, were rooted in racial tension: Blacks in late 19th century America (like the Chinese) were becoming increasingly vocal about their second-class citizenship, challenging years of social oppression. The lived experience of many police officers undoubtedly involved conflicts with blacks, helping to explain how the “black cocaine mythology” became salient among the white-majority. Blacks were challenging the status quo, and alongside it, the belief that they were inferior to whites. A scapegoat, such as the black cocaine fiend, helped to divert attention from the tensions this evolution in consciousness precipitated. Propagating the dope fiend mythology helped to generate support for policies designed to curtail the social and political power of Blacks, just as the same mythology shored up support for anti-Asian

² Throughout the 19th century “almost the whole of scientific thought in both America and Europe ... accepted race inferiority” (Halen, 1971, Cited by Duckitt, 1992: 1183). In 1902 the American Pharmaceutical Association reported that “the use of cocaine ... by negroes in certain parts of this country, is simply appalling ... The police officers of these questionable districts tell us that [black] habitues are made wild by cocaine” (Cited by Cloyd, 1982: 36).

legislation in Canada, such as head taxes, and voting disqualifications.

A Riot Erupts in Chinatown

The Asiatic Exclusion League (A.E.L.), an organization constructed to eliminate the "yellow peril" through lobbying for more restrictive immigration policies (Giffen et al., 1991), organized a demonstration in Chinatown in 1907 to publicize their views. It quickly turned into a confrontation between the Asian opium merchants and the demonstrators. What had started out as a peaceful demonstration quickly turned into a melee, and apparently a riot. Several people were injured, and substantial property damage was incurred by Chinese and Japanese business owners, who submitted claims for damages to the government (Comack, 1991). The federal government sent Mackenzie King (then deputy minister of Labour) to look into the situation, and report back to the federal government.

According to a *Vancouver Province* story, when Mackenzie King arrived in Vancouver he was surprised to "receive claims for \$600 each from two Chinese opium merchants for six days loss of business as a result of the rioting" (Comack, 1991: 48). Prior to arriving in the city King was apparently unaware of the opium dens that had been opened by the Chinese. "I will look into this drug business", King reported. "It is very important that if Chinese merchants are going to carry on such a business, they should do so in a strictly legal way" (Cited by Boyd, 1993: 28). Initially, at least, King seems to have had little interest in prohibiting the sale of opium. Several days later, "after receiving a deputation of Chinese Christian clergymen and merchants

interested in anti-opium legislation”, he seems to have changed his mind (Boyd, 1993: 28). “We’ll get some good out of this riot yet” he would later vow (Comack, 1991: 48).

King submitted his report about the riot to the federal government, as well as the claims for economic compensation he received from the opium den merchants. Comack (1991) concludes that Mackenzie King suggested that the riot in Vancouver was precipitated by a “moral” or “normative” problem involving the Chinese habit of smoking opium. King, it seems, accepted the interpretations of the police and clergymen that opium was an extremely dangerous drug, capable of causing several social, medical, economic, and criminal problems, rather than defining the problem in terms of a shrinking labour market, and the economic insecurities and racial animosities that it helped to generate. King returned to Ottawa, argued that a ban on opium was urgently needed, and in less than three weeks Rodolphe Lemieux (the minister of labour) successfully introduced legislation in the House of Commons. *The Opium Act of 1908*, Canada’s first anti-narcotic law, was enacted without debate (Comack, 1991).

If Mackenzie King truly believed the rhetoric about opium being the morally corrupting drug responsible for the problems in Vancouver in 1908, within a year he had good reason to reconsider them. In his diary for 1909 King notes that:

Some persons were of the opinion that opium was used by many of the Sikhs in the same way that Lord Morley was using the cigar which he smoked; that it did not appear to harm them in that climate when used in moderation; that if taken from them it might lead to other drugs being used. Lord Morley would give me the names of one or two gentlemen to whom I could speak freely as

to conditions in India. They would give me a true statement of conditions, not to be given, for example, to the people in North Waterloo [King's constituency], but which I might impart privately to Sir Wilfred [Laurier] (Cited by Boyd, 1993: 30).

Unfortunately, this kind of information about opium was never discussed publicly by the government. The image most commonly presented in the media (by police, and others, like Emily Murphy) emphasized the dope fiend mentality. While erroneous, it had become salient in the popular imagination, ensuring continued public support for criminalization. Perhaps the most significant consequence of prohibition occurred almost immediately following criminalization: consumption of morphine and heroin -- both considerably stronger than opium -- increased (Boyd, 1993). Criminalization, rather than reduce drug use, simply forced users to switch to the remaining legal opiates.

Subsequent Legislation

In 1911 the federal government enacted *The Opium and Drug Act*, which banned morphine and heroin, except for "medical or scientific purposes". This had the effect of pushing all opiate manufacture and distribution underground. And while it seems "quiet arrangements could be made for 'respectable' addicts to receive drugs" from physicians (Giffen et al., 1991; 36), the poor were immediately forced to rely upon criminal sources. Physicians regarded middle and upper class opiate users as "good citizens who have become addicted to the use of the drug innocently, and who are in every sense of the word 'victims' (Cited by Duster, 1970: 11). The less affluent, often suffering from social, medical, and legal problems linked with their economic position and other drug taking behavior (i.e. alcohol and tobacco), were defined as

"dope fiends". One doctor explained that *these* opiate users include "all of the physical, mental and moral defectives, the tramps, hoboes, idlers, loaders, irresponsibles, criminals, and denizens of the underworld". In these cases, morphine addiction is a vice ..." (Cited by Duster, 1970: 11). Several other legislative changes -- concerned mostly with increasing penalties for drug users and expanding police powers -- occurred subsequent to the 1911 Act (see Giffen et al., 1991). Most were collated into the *Narcotic Control Act* (1961), our current drug law.

The Media and the Propagation of Drug Stereotypes.

Today the media and the police continue to propagate the myth of the "dope fiend". As the Chief Coroner of B.C., Vince Caine, notes: "the media portrays the most visible, most overtly controversial, most socially, and economically depressed people as addicts" and tends to ignore drug users who have remained "invisible" to official scrutiny (British Columbia, 1994: 1). Since most people obtain information about illicit drugs from television (Ericson et al., 1987), it is not surprising that many believe that use of heroin automatically leads to several social and medical problems for users. The dope fiend mentality lives on. Our tendency to rely uncritically on the media, and drug stereotypes, helps us avoid realities that are more complex -- and less understood -- than we are comfortable acknowledging. As Powers (1990: 8) argues, "let a scapegoat be found, let a culprit be punished and the public relaxes, confident that the crisis has been surmounted". The War on Drugs has made heroin a scapegoat for a slew of social problems, and has diverted our attention from the full range of causes of these problems.

Criminal justice system officials have also propagated these beliefs. One U.S. Supreme Court Judge³ argued that:

To be a confirmed ... [heroin] addict is to be one of the walking deadThe teeth have rotted out, the appetite is lost, and the stomach and the intestines don't function properly. The gall bladder becomes inflamed; eye and skin turn a bilious yellow; in some cases membranes of the nose turn a flaming red; the partition separating the nostrils is eaten away -- breathing is difficult. Oxygen in the blood decreases; bronchitis and tuberculosis develop. Good traits of character disappear and bad ones emerge. Sex organs become affected. Veins collapse and livid purplish scars remain. Boils and abscesses plaque the skin; gnawing pain racks the body. Nerves snap; vicious twitching develops. Imaginary and fantastic fears blight the mind and sometimes complete insanity results. Often times, too, death comes -- much too early in life Such is the torment of being a drug addict; such is the plague of being one of the walking dead (Cited by Brecher, 1972: 21).

Like all drugs, there *are* side-effects associated with the use of heroin. The above description, however, totally misrepresents them. First, despite the stereotype (and as noted earlier), heroin *does not produce any permanent physiological damage* (Alexander, 1990; Trebach, 1993; Weil & Rosen, 1983). This medical fact "is virtually unchallenged among medical researchers. It is based on decades of careful research on thousands of long-time opiate users" (Alexander, 1990: 150). However, chronic heroin use *can* lead to constipation, a reduced sexual libido, and cessation of menstruation in females. All of these effects are transient, however, and disappear when use is discontinued (Alexander, 1990). Compared to chronic use of alcohol (which can lead to cirrhosis of the liver, hormonal imbalances, and severe physiological damage to virtually every major organ in the body) chronic use

³ The comments are taken from the U.S. court case, *Robinson v. California*, 370. U.S. 660., (1962), cited by Brecher (1973).

of unadulterated heroin is, medically speaking, safer.

Most of the effects erroneously attributed to heroin are caused by other drug taking behavior, conditions created by the War on Drugs, or failure to maintain a healthy diet (Alexander, 1990; Krivanek, 1988; Trebach, 1993; Weil & Rosen, 1983). For example, liver pathologies -- common to the 20th century heroin user -- are typically caused by chronic alcohol abuse, while lung and heart problems are often caused either by the adulterants that are combined with the drug when it is sold illegally, or by tobacco abuse. Most of the remaining disease states result when virus-contaminated needles are shared, or when a user is unable to maintain a healthy diet. This study, using autopsy and drug toxicology data from the B.C. Coroner's Service, makes these issues explicit.

The Study.

This study provides a comprehensive look at heroin drug overdose in B.C. I compare these findings to the alcohol overdose. The findings suggest that the popular perception that heroin is inherently dangerous is erroneous: autopsy reports indicate that alcohol is far more toxic when used chronically than heroin. As a result, the study challenges the contemporary distinction made between these two drugs (i.e. legal versus illegal) and the decision to employ the criminal law to reduce the abuse of these substances. This distinction, and the criminalization of opiate drug users, is based upon a mythology about heroin and a stereotype of users moreso than concerns for public health. In the Methodology Chapter that follows, the personnel involved in the drug

overdose investigation are introduced, the process of gaining access to the data is discussed, and the research modalities used to collect the data are explained.

CHAPTER TWO: METHODOLOGY.

Introduction

This is an exploratory study, aimed at providing a comprehensive portrait of the nature and causes of deaths officially attributed to heroin. It accomplishes this, in part, by comparing these deaths to a sample of alcohol overdose deaths that occurred during the same time period. This chapter introduces the *major actors* involved in these overdose investigations, including the police, the forensic pathologist, the toxicologist, and the coroner. The chapter also describes *methods* used to accomplish the goals of the research, as well as the process of *gaining access* to drug overdose data in B.C. I also describe some of the procedures used by the Coroner's Service to conduct their own study into heroin overdoses in the province (British Columbia, 1994), in order to highlight the pervasiveness of the cultural bias in favour of legal drugs. Finally, the chapter concludes by summarizing the limitations of the study.

Major Actors Involved In the Overdose Investigation.

The Police

The police are often the first investigators to attend the scene of a suspected overdose. They will look for evidence at the scene that might suggest the nature and cause of death, including a search for drugs (e.g. heroin, alcohol). In cases where illicit drugs, such as heroin, are involved police will also look for drug paraphernalia (e.g. syringes) that may suggest the *mode of administration*. Where alcohol is thought to be involved police will note

whether evidence of alcohol use was present at the scene (e.g. liquor bottles). In addition, police interviews with witnesses (if available) often help to determine the *events prior to the overdose*, and their *history of alcohol and/or illicit drug use*. This information, helpful in providing context to these deaths, is summarized in a "Sudden Death Report" which is submitted to the coroner.

The Forensic Pathologist

Where a death has occurred suddenly, or unexpectedly, a forensic pathologist will conduct a postmortem (autopsy) examination on the decedent in an attempt to establish the mechanisms involved in the death. This generally includes a microscopic analysis of body tissues, and a macroscopic analysis of the major organs (e.g. liver, lungs, heart). In deaths thought to be caused by drugs the pathologist will also extract bodily fluids and submit them for analysis to the Provincial Toxicology Centre, where toxicologists will perform assays to determine the *kinds of drugs* in the body, and their *postmortem levels*. In most cases blood is extracted since it is the best indicator of current drug use; however, in cases where major decomposition makes the blood untenable, the pathologist will extract urine, vitreous fluid, bile, or sections of the liver in an attempt to ascertain if drugs were involved in the death. A copy of the report completed by the pathologist conducting the autopsy examination is then submitted to the coroner.

The Toxicologist

A toxicologist (after receiving a sample of blood drawn from the decedent) will

determine whether drugs are present, and if so, what their concentrations are. The Provincial Toxicology Centre relies upon established lethal guidelines when determining if a particular drug concentration was likely the cause of a decedent's death. These guidelines are based upon "cumulative case reports and experience from world wide literature generated by laboratories associated with coroners or medical examiners offices" (Carlyle, 1993:2). International forensic experience with deaths associated with drugs -- whether legal or illegal -- indicates that a wide range of drug concentrations characterize these deaths. These include coroner's cases where overdose deaths have been attributed to drugs at *below* established lethal levels and where quantities of drugs have been detected far in *excess* of them. In cases where lower than lethal drug levels have been found *existing medical conditions*, the *presence of other drugs*, as well as recent *loss of drug tolerance*, are often factors in these deaths.

The Coroner

Coroners are lay persons appointed by the Lieutenant Governor in Council upon the recommendation of the provincial Attorney General. They are responsible for establishing the identity of the decedents, when and where they died, and the cause of death. These include deaths that have occurred in a variety of contexts, including: disaster situations, motor vehicle accidents, and unexpected deaths -- whether from disease, sickness, drug overdose, or unknown causes. Coroners obtain the authority to conduct these investigations from the *Coroners Act* (R.S. Chapter 68). Section 16 of the *Coroners Act* states:

A coroner or a medical practitioner or a peace officer authorized by a coroner to exercise all or any of his powers under this subsection, may (a) view or take possession of any dead body, or both; and (b) enter and inspect any place where a dead body is and any place from which the coroner has reasonable grounds for believing the body was removed.

The *Coroners Act* also authorizes coroners to review the findings of the police, the pathologist, and the toxicologist. Section 16(2) of the *Coroners Act* states that a coroner may:

(b) inspect information in any records relating to the deceased or his circumstances; (c) seize anything that the coroner has reasonable grounds to believe is material to the investigation.

Thus, the coroner's final determination of the cause of death in cases involving drugs is anchored in evidence provided by the police, the pathologist, and the toxicologist. The coroner reviews the findings of these professionals and summarizes them in a report called "The Final Judgment of Inquiry" which forms the qualitative component of this study. The quantitative component relies upon the toxicologist's report.

Getting In: Gaining Access to the Data.

In addition to the data collected, the process of gaining access to data sources is worthy of analysis (Harvey, 1990; Kirby & McKenna, 1989). To obtain data on these overdoses I had to make a written application to the B.C. Coroner's Service, requesting access, and stating my research focus. I indicated that my literature review on drug toxicology suggested that attributing the cause of death to a drug is an extremely complicated process, and that it seemed the exact drug level required to produce an overdose situation was somewhat

equivocal. While coroners tend to rely upon so-called established lethal levels, it is often difficult to determine the dose necessary to produce an overdose because these doses vary depending upon a host of factors. I discussed these comments at a meeting I was invited to at the Coroner's Office prior to the commencement of the research.

I thought this meeting was simply a formality -- a rite of passage, easily negotiated and one of the steps that had to be taken to conduct research in the field. It seems it was more than this, however. Members of the Coroner's staff suggested to me that my comment, made in my introductory letter, that "the exact toxicology required to produce an overdose was somewhat equivocal" indicated that I did not fully appreciate the complexities of postmortem toxicology, and that perhaps I did not have the expertise to conduct an analysis of drug toxicology levels. I was told that there were differences between "clinical" and "postmortem" toxicology, and "chronic and "acute" overdose deaths. Much of the discussion involved jargon I was unfamiliar with, and seemed designed to obfuscate the fact that, despite all of our science, postmortem drug levels are often an inexact gauge of the quantity of drugs in the system at the time of death. Nonetheless, being a student I left the Coroner's office that day wondering if these professionals were right. Who was I to attempt a study when I, based upon their logic, apparently did not have the necessary scientific background? After all, I was a graduate student of *criminology*, not medicine or toxicology.

I discussed this meeting with a number of my peers in the School of Criminology at S.F.U., as well as my academic committee. Some suggested

that these "experts" were likely involved in a process of "gate keeping"; that is, maintaining a professional boundary around the area of drug death. It appeared to some of us that they were suggesting that the problem of the drug overdose was only comprehensible to individuals with the "proper" training (i.e. a medical or toxicology background). It seemed they were suggesting that only toxicologists were capable of understanding toxicology reports, and only pathologists were trained in interpreting autopsy results. I pushed my criminology books to the side, and headed to the library to explore the field of toxicology and forensic pathology. I discovered that "established" lethal levels are somewhat of a fiction, and that they are rarely sufficient to establish the cause of death alone.

Problems With Postmortem Drug Levels.

While coroners rely upon established lethal levels, there is a great deal of controversy within the scientific and medical literature as to their utility in coming to terms with these deaths. Inferences about the role a particular drug may have played in a death, based upon postmortem drug levels, are fraught with problems because a number of factors (e.g. presence of other drugs, disease states, level of tolerance) can alter the disposition, concentrations, and pharmacological effects of drugs in the body. Several of these factors can increase the odds that a toxic reaction will occur. To complicate interpretations further, drug levels far in excess of the established lethal levels have been found in subjects dying from causes *other than an overdose*, indicating that even at these concentrations death does not always result. Thus, postmortem drug levels, *per se*, are not always helpful. Other factors must also be

considered in the etiology of these deaths, including the abuse of other drugs (legal and illegal), and the medical health of the decedent prior to death.

Working at the Chief Coroner's Office gave me an opportunity to talk with members of the Task Force regarding my findings, which proved to be very helpful to me. Some of the Coroner's staff also solicited my input. Consequently, I took this opportunity to suggest that I believed the common view of heroin was, in part, erroneous. I also indicated that my review of the toxicology reports from the heroin overdose suggested that alcohol and other drugs were almost always involved in these deaths, something I felt was being downplayed by coroners, perhaps inadvertently. While these deaths are classified as heroin overdoses, only a small minority of decedents had *only* heroin in their blood at death, suggesting that other drugs may also have been factors in their deaths. After hearing these comments one staff member indicated to me that it appeared that I was trying to under-estimate the role of heroin in these deaths, and over-emphasize the role of licit drugs such as alcohol. It was also suggested that the large number of cases involving alcohol may be a consequence of postmortem decomposition, which can also produce alcohol.

I took these comments seriously, and attempted to ascertain what role, if any, post mortem decomposition was playing in creating alcohol. I contacted Dr. Laurel Gray, who does the lion's share of heroin overdose autopsies in Vancouver. Dr. Gray agreed to meet with me to discuss the matter. Since I had taken extensive notes on every autopsy case from 1991 Dr. Gray was able to determine the likelihood that decomposition was producing alcohol in these

cases. After reviewing these files Dr. Gray concluded that decomposition *may* have been a factor in 4 of these cases, or about 2% of the sample. Thus, it seems that the alcohol levels detected in the vast majority of cases resulted from alcohol consumption, not decomposition.

The Report of the Task Force Into Illicit Narcotic Overdose Deaths.

Coincidentally, while I was collecting data for my thesis the Coroner's Service was involved in a study of their own on the epidemiology of illicit drug overdoses. Their study, commissioned by the provincial government in June 1993, led to the publication of the Report *of The Task Force Into Illicit Narcotic Overdose Deaths in British Columbia*. While overall I think the report successfully portrays the heroin overdose, the toxicology findings are somewhat misleading. I noticed that their toxicology conclusions (British Columbia, 1994: Chapter 2) did not match mine, even though we were looking at the same data. The Task Force developed a drug typology that, among other things, suggested about 18% of the heroin overdose deaths (in 1993) involved only heroin, while I had established that only 6% did.

When I contacted the Coroner's Service and explained to them this, and other toxicological contradictions, I was told that these discrepancies were likely a consequence of how these cases were "interpreted by the Task Force". While the Task force may have determined that there were indeed several drugs in the blood of a particular decedent at death, they elected to present only those drugs that were seen as contributory to the death. Thus, low drug levels were excluded from their drug typology and their report. The Task Force's decisions,

however, were clearly culturally-biased: below established lethal levels of prescription drugs, over-the-counter medications, and alcohol were not cited, while below established lethal levels of cocaine or morphine always were. Coroners also attributed deaths to heroin in cases where it was only detected in the urine, which was never done in cases where alcohol was only detected there, even though toxicologists agree it is a better indicator of *past* use than current use (Baselt, 1983). This highlighted for me the pervasiveness of our cultural bias in favour of legal drugs, and that "our classifications are human impositions, or at least culturally based decisions on what to stress among a plethora of viable alternatives" (Gould, 1990: 73). While I doubt the Task Force or the coroners involved in these cases purposely wanted to misrepresent the toxicological reality of these deaths, their findings suggest that this cultural bias is deeply entrenched.

The mechanism of death in suspected drug overdoses can be complex. Deaths may result from the toxicity of a single dose or the effects of cumulative doses; polysubstance abuse, existing medical conditions, and loss of tolerance, can further increase the odds an overdose will occur. Further still, because of the nature of drug activity after death, it is often difficult to rely upon postmortem drug levels when coming to conclusions about the role a particular drug may have played in a death. Excluding some drugs (i.e. alcohol, prescription, and over-the-counter drugs) and not others (i.e. cocaine and heroin) based upon a preconceived notion of which drugs, in the language of our culture, have a less favorable image, is not only precarious, but misleading.

Research Goals.

The first goal of this research project is to provide *context to these deaths*. This involved analyzing: a number of demographic characteristics; the events (when known) preceding the overdose; the mode of drug administration (e.g. intravenous, intranasal); the decedent's history of alcohol and/or illicit drug use; and finally, their medical condition prior to death. These factors are significant in terms of understanding the cause of these deaths. Unfortunately, they are sometimes reduced to epiphenomenal status. When someone hears of an "heroin overdose" they -- not surprisingly -- infer that the heroin was the primary cause of death. In the context of the "war on drugs" the attention is on the *drug*, rather than the social or medical context of consumption, which, based upon the findings of this study, can be equally important etiological factors in these deaths.

The second goal is to provide a toxicological analysis of these deaths, based on both the kinds of drugs associated with these deaths, and their levels. Alcohol overdoses refer to deaths caused by alcohol; however in about one-third of these cases other drugs are also involved. It is likely that these other drugs were contributing factors in many of these cases. Similarly, while heroin overdoses officially refer to deaths caused by heroin, almost all involve more than one drug, suggesting that these other drugs may also have been factors in these deaths. Polysubstance abuse seems to be a significant factor in the etiology of these overdose deaths.

The third goal is to discuss these findings in the context of our current policy of

prohibition, or War on Drugs. This policy, while well-intentioned, has created a division between “acceptable” drug use (i.e. alcohol) and unacceptable drug use (i.e. heroin). It also suggests that drugs can be *inherently* good or bad. This is a cultural bias inherent in North America that does not stand up to scientific scrutiny. Both drugs can be equally dangerous; however these dangers are more a function of the context of use, than of anything intrinsic to them. Unfortunately much of the wisdom surrounding legal and illegal drugs is erroneous and based upon moral, and cultural factors that have little to do with the actual harmfulness of these substances. By downplaying the role of alcohol (and other legal drugs) in some heroin overdose deaths, and over-emphasizing the role of heroin (and other illegal drugs), even when they have been detected at *below* lethal levels, the cultural bias against heroin (and in favour of alcohol and other legal drugs) is given official support.

METHODS.

Quantitative Analysis

The quantitative analysis involved collecting drug toxicology information from 375 deaths attributed to alcohol, and 654 deaths attributed to heroin. These cases represent approximately 95% of all the alcohol overdose deaths and 97% of all heroin overdose deaths reported by the B.C. Coroner’s Service. These deaths occurred between 1984 and 1993. The remaining cases were unavailable because they were being used by employees of the Coroner’s Service, or they were misfiled.

Drug toxicology data used in this analysis includes the kinds of drugs detected in the blood of the decedent, as well as their concentrations. Postmortem *blood* levels were analyzed rather than drug concentrations found in other body parts (e.g. urine, bile, or liver) because blood is considered the best indicator of current usage (Baselt, 1983). The urine, bile and liver may all contain drugs several days after consumption, and are therefore less exact measures of current usage⁴. Toxicology data were gleaned from the toxicology report completed by toxicologists, and entered into the computer program, *FileMaker Pro*, which was adapted to enter this data.

The process of determining what caused someone to overdose is very complex. Drug overdoses “are not always explained solely in terms of excessive intake of the drug. One person may die in a given set of circumstances, while another may not” (British Columbia, 1995:v). Others argue that it is impossible “to find a drug that will act with complete uniformity on all human beings. In order for this to be accomplished, variation, the cornerstone of evolution, and biochemical individuality would have to be abolished” (Eckert, 1980:117). Thus, while drug toxicology data play a role in determining the cause of death in suspected drug overdoses it is often not enough to determine why a person died. A number of social and medical factors mediate the effect a drug has on the human body. As a result, drug toxicology information must be evaluated in combination with the social and medical context of consumption. This study attempts to broaden our understanding of alcohol and heroin overdoses both through a toxicological

⁴ One coroner explains, for example, that: “Postmortem fluid and tissue concentrations in victims of heroin overdoses can vary considerably depending upon the prior narcotic history of the subject. Liver, bile, kidney and urine ... may be more representative of past exposure ... while blood ... [is] probably the best guide to very recent usage”.

understanding of the *pharmacological* role of certain drugs in a death, as explicated in the quantitative analysis, as well as through a *biomedical and social context*, as explored in the qualitative component of the research.

Qualitative Analysis

Those who employ qualitative research techniques typically “reject the idea that a statistical criterion can define explanation or understanding” (Palys, 1992: 9). The quantitative analysis provides such a criterion, by describing the average concentrations of the drugs detected in the blood of these decedents. However the wide range of postmortem drug levels found in these cases makes the average postmortem drug level detected in decedents less than ideal for describing these deaths. In some cases extreme “outlier” scores, that is, concentrations that are well outside the range of the majority of cases, distort average drug levels. A more complete understanding of these deaths requires evaluating toxicological findings against the *individual context* within which they exist. This is because existing medical conditions, and the use of other drugs both mediate the pharmacological effects of these drugs. Death does not occur in a vacuum. The context of these deaths was examined by analyzing an additional thirty coroners files selected from the last three years of the study (i.e. 1991, 1992, 1993).

The Coroner’s file is helpful in providing context to these deaths because it summarizes the police report completed by the police agency investigating the death, and the autopsy report completed by the forensic pathologist. Both provide social and medical context to these overdoses, and make the drug toxicology data more meaningful. The police report summarized by the

coroner provides social context to the overdose by delineating scene circumstances, including information such as the *mode of drug administration*, some indication of the *events prior to the overdose*, as well as the decedent's *history of drug use*. The autopsy report summarized by the coroner provides biomedical context to the overdose by establishing the decedent's *medical condition* prior to death. Autopsy information also provides a separate index, in the form of organ damage, of the decedent's *history of drug use*.

Content Analysis and Sample

Fifteen alcohol and fifteen illicit drug overdose cases⁵ were selected randomly from a printed list of files covering the years 1991, 1992, and 1993. The list was provided by the Coroner's Service. Each of these files was then content analyzed. The content analysis involved tallying: (1) a number of common demographic variables, (2) the events prior to the overdose, (3) the history of the decedent's use of alcohol and/or illicit drugs, and (3) the decedent's medical condition prior to the overdose.

Demographic Characteristics

Each coroner's file contains a Death Certificate that lists a number of the demographic characteristics of the decedents, including their age, sex, marital status, and occupation. These data were noted for both the alcohol and the illicit drug overdose subjects. The *occupation* of the decedent listed

⁵ This list does not distinguish between *kinds* of illicit drug overdoses; consequently 3 of these overdoses were attributed to cocaine, and one was attributed to methadone. When reference is made to this component of the research, the term "illicit overdose" is used.

on the Death Certificate however is an inexact indicator of the decedent's employment history. This is because it is listed under a section titled, "Employment Held For Most of Working Life". As a result, conclusions based upon this demographic characteristic should be made with care: it is possible that the decedent was employed in another occupation at the time of death, or was unemployed.

Events Prior To the Overdose

Using information typically supplied by the police, coroners attempt to reconstruct the activities that preceded the death as best as possible, and summarize them in the *Final Judgment of Inquiry*. In some cases this information is less than helpful, however in others, it provides information that helps explain the death; for example, in several instances it seems the fatal overdose followed a period of abstinence (and therefore reduced tolerance) from drug use. I rely upon the coroner's summary of the activities of the decedents prior to death to establish the *events prior to the overdose*. Since in many cases this information is difficult to establish, the events are not known. This issue is explored further in the Findings Chapter (chapter 4).

Medical Health of the Decedents

The decedent's *medical health* was determined by examining the pathologist's autopsy report. Only preexisting medical conditions were quantified. Medical complications resulting from the overdose event itself were excluded from the analysis. These medical pathologies were then

classified according to whether they were: (1) caused by alcohol abuse, (2) caused by illicit drug abuse or (3) caused by some other conditions, such as a poor diet or chronic tobacco abuse.

Chronic excessive consumption of alcohol, often over several years, results in tissue degeneration in several major organs of the body. Eventually the liver, spleen, and pancreas will enlarge, and may lead to cirrhosis and pancreatitis (Balch & Balch, 1990). As a result, the identification of these conditions at the autopsy examination provides *prima facie* evidence of medical pathologies caused by alcohol abuse. The following statements provide examples of the physiological damage caused by chronic alcohol abuse:

“There was a moderate degree of fatty degeneration in the liver, of a type most frequently associated with chronic alcohol abuse”.

“Fatty metamorphosis of liver consistent with [a] history of alcoholism”.

“His liver was enlarged and showed an established cirrhosis...”

Unlike the chronic use of alcohol, the chronic use of *unadulterated* heroin is not associated with any physiological damage (Alexander, 1990; Krivanek, 1988). Medical problems associated with the chronic abuse of heroin typically result from the substances that it is combined with when it is obtained illegally. The accumulation of these agents in the major organs of the body eventually leads to severe scarring. When this scarring occurs on the lungs it is commonly referred to as “Junkie Lung”. These substances (e.g. valium, lactose, lidocaine) are combined with illicit drugs to increase their volume and profitability. Thus, “the deleterious effects of the impurities are not a

pharmacological effect of the opiates, but rather one of the societal effects that are imposed [upon heroin users] by making the pure drug unobtainable” (Alexander, 1990: 150). As a result, the following statements, gleaned from the autopsy report, provide *prima facia* evidence of medical conditions created by our current *societal response* to heroin:

“... severe Junkie’s lung”.

“Sections of the lung showed ... foreign material deposition consistent with known history of intravenous drug abuse”.

“Foreign body granulomas in lungs, liver, and spleen”.

Other Medical Conditions

In addition to medical conditions associated with the abuse of alcohol or illicit drugs, pathologists identified a number of other medical pathologies at the autopsy examination. These include: H.I.V., atherosclerotic disease, hepatitis B, to name a few. These conditions were also tallied, both for the alcohol overdose subjects and the illicit drug overdose subjects.

The Decedent’s History of Drug Use

Interviews made by police or friends, family, and/or treatment personnel help to suggest the decedent’s history of alcohol or illicit drug use. In cases where a history of *alcohol* use has been established, coroners will note that:

“The decedent was a chronic alcoholic”

“The decedent had a well documented history of alcohol abuse”

Similarly, where evidence from friends, family, or treatment personnel suggests that the decedent had a history of *illicit* drug use the coroner will typically note this in the file, as in the following examples:

“Friends of the deceased admitted he was a known abuser of narcotics”.
“... [the decedent was] recently released from a halfway house relative to extensive heroin use”.

Autopsy evidence of organ damage attributed to alcohol abuse (e.g. fatty degeneration of the liver) or the agents that illicit drugs are commonly combined with (e.g. “Junkie lung”) provided a separate index or measure of the decedent’s history of drug use. In the majority of cases, the decedent’s history of drug abuse was supported by both of these indicators.

Limitations and Caveats.

The first limitation of my thesis is that it does not explore the voices of living drug users; instead, it focuses upon the dead. While the body of the drug overdose victim can tell us much about the life of the drug user, it is far from a complete picture. Moreover, a consideration of how drug users *themselves* interpret their drug use is also important. While no systematic contact was made with drug users, I did meet with several current or former heroin users. All of these contacts were made informally through colleagues who mentioned that I was conducting research into alcohol and heroin overdoses to people who work with alcohol and heroin abusers. These conversations proved to be extremely valuable since I have no personal experience with heroin or heroin

users. These conversations sensitized me to several issues that are intertwined with many alcohol and heroin abusers, including adequate health care, housing, and education.

The second limitation relates to the representativeness of my sample. While the sample in this study represents nearly all cases of alcohol and heroin drug deaths in B.C. officially recorded between 1984 and 1993, it is likely more representative of heroin drug deaths than alcohol deaths. This is because medical problems caused by chronic alcohol abuse (e.g. cirrhosis) that typically contribute to death in a less acute manner are not recorded as alcohol overdoses. These deaths are classified by the Coroner's Service as "alcohol-related" deaths⁶. In 1990 2,959 deaths in Canada -- while directly attributable to alcohol⁷ -- were classified in this manner (Canadian Centre on Substance Abuse, 1994). These alcohol deaths are not reflected in the alcohol overdose statistics collected by the coroners' service of any of the provinces.

The third limitation of my thesis relates to the myths about heroin users that it may inadvertently help to propagate. One of the major challenges in conducting drug research is obtaining accurate and representative information about drug users. Traditionally, drug researchers have had to rely upon data from drug users who have been arrested and/or incarcerated for a drug offence, or those who have been involved in drug treatment programs (Pottieger, 1981). These samples are unlikely to be an accurate gauge of the

⁶ About three-quarters of these decedents (73%) suffered from cirrhosis (or other liver diseases). 20% suffered from alcohol-caused mental disorders (e.g. Korsakoff's Psychosis).

⁷ The Canadian Centre For Substance Abuse (1994) reports that the number of deaths indirectly caused by alcohol abuse is approximately 15,665 deaths a year.

actual number of drug users in the population, or the various kinds of drug use. In fact, they are heavily biased towards those experiencing serious social, medical, or legal consequences as a result of their drug use (Zinberg, 1984). The same is true of my sample. This study focuses on a sample of alcohol and heroin users who do *not* represent the continuum of alcohol or heroin use in Canadian society. In terms of *alcohol* use, most will realize this immediately since most Canadians distinguish occasional (i.e. social) alcohol use from more destructive forms of alcohol consumption (i.e. alcoholism). Unfortunately, most do not make the same distinction between the use and abuse of *illicit drugs* such as heroin.

Notwithstanding the stereotype of the "junkie", most heroin users, like most alcohol users, are *not* chronic abusers (Mitchell, 1991; Zinberg, 1984). Unfortunately media accounts often portray the most visible and most socially and economically depressed people as heroin users, and ignore less problematic heroin use. Both past (e.g. Zinberg, 1984) and current literature (e.g. Alvarez, 1996; Clark, 1996) suggests that occasional heroin use is common.

John Turvey, director of the Downtown Eastside Youth Activities Society (D.E.Y.A.S.), estimates that there are probably about 15,000 addicted heroin users in B.C. and about 45,000 moderate users, a ratio of about 3:1 (Middleton, 1994). Drug researchers have suggested the number of moderate users compared to addicted users may be much larger: Trebach (1986) reports the ratio of moderate to addicted users is about 7:1, while Zinberg (1984) cites research suggesting the ratio may be as high as 10:1. Since

studies indicate that the ratio of moderate to compulsive alcohol users is about 9:1 (Boyd, 1993; Kleiman, 1992) there may be a similar percentage of *both* users that develop compulsive relationships with these drugs.

Much of the prevailing wisdom, both about alcohol and heroin, is inaccurate. I learned this first hand when I explained to an undergraduate class at S.F.U. that while alcohol abuse can cause damage to a number of the major organs in the body, unadulterated heroin does not. My comment met with a number of bewildered looks; the stereotype of the "heroin junkie", and the dope fiend mentality promoted in the media, clashed with what I was telling them. My comment, however, has a solid foundation in the medical literature. Unfortunately, in the context of the War on drugs, this literature is often ignored⁸. Most of the claims about the dangers of heroin are "exaggerated, unsubstantiated, or untrue" (Alexander, 1990: 130). These beliefs perpetuate a mythology about heroin use, interfere with attempts to discuss these drugs objectively, and provide support for measures such as the War on Drugs.

At the heart of my thesis is a desire to "strip away some of the outworn clutter of fictions" surrounding both alcohol and heroin, as well as to "delve beneath ostensive and dominant conceptual frames" (Harvey, 1993: 18, 4). In North America we face an entrenched double standard. We are bombarded with sophisticated advertisements that link alcohol consumption with a glamorous and exciting lifestyle, while at the same time we face media announcements suggesting that illicit drugs such as heroin are "a repudiation of everything America is" (Kappeler et al., 1993: 149). This study attempts to transcend this

⁸ Mitchell (1991) reports that virtually every impartial study on illicit drugs (e.g. the *Report of Inquiry Into the Non-Medical Use of Drugs, 1973*) has been ignored.

rhetoric, and the false distinction made between legal and illegal drugs. Alcohol and heroin both can be extremely deadly; however the precise nature of their dangers are associated with several factors *beyond* their pharmacological properties. The following chapter presents findings that bear on these points, including the social, medical, and legal context within which these drugs are used.

CHAPTER THREE: FINDINGS

Opening the Casket.

Part One: The Social and Medical Context

Introduction

This chapter describes fatal overdoses attributed to alcohol and heroin in terms of the drugs involved in these deaths, as well as the social and biomedical context of consumption. Both perspectives are necessary for a comprehensive understanding of the etiology of these deaths. The first part of the chapter, which employs qualitative research techniques, provides social and medical context to these deaths by reviewing: (1) major demographic characteristics of the decedents; (2) events proceeding the overdose; (3) mode of drug consumption; (4) medical condition of the decedent prior to the overdose; and (5) the decedent's history of drug use. Using quantitative research techniques, the second part of the chapter compares drug toxicology data from 375 alcohol overdoses and 654 heroin overdoses. In this section of the study I discuss the *kinds* of drugs detected in these decedents, as well as their postmortem *levels*. Several factors mediate the disposition of drugs in the body after death, making postmortem drug concentrations inexact indicators of the amount of a drug consumed. These factors are also reviewed. While I have attempted to reduce the use of medical jargon as much as possible, in several places this has not been possible. Consequently, a glossary of these terms is provided at the end of the thesis.

Demographic Characteristics of the Decedents.

While alcohol and drug use (both licit and illicit) cuts across socio-economic

strata (Canadian Centre For Substance Abuse, 1994; Le Dain, 1973; Smart, 1983), overdose deaths, whether attributed to alcohol or illicit drugs such as heroin, seem to be over represented among those occupying the lower rungs of the socio-economic ladder. Similar demographic findings have been reported by Ingold (1986) in a study of drug-related deaths in France, and Wong & Alexander (1991), in a study in Canada. The demographics of the overdose subjects studied in this report, including their occupation, age, and marital status, were gleaned from the Death Certificate contained in the Coroner's file.

Occupation

The occupation of the decedent is listed on the Death Certificate under the title, "Occupation Held For Most of Working Life". As a result, it was not possible to confirm whether the decedent was employed in this occupation at the time of death. It does indicate, however, that most alcohol overdose subjects (67%, n = 10) and illicit drug overdose subjects (67%, n =10) were involved in "working class" or "service industry" employment throughout most of their lives. Most overdose subjects were described as: labourers, truck drivers, and restaurant workers. Other occupations held by alcohol overdose subjects include: self-employment/homemaker (n = 2), student (n=1), and in two cases coroners were unable to establish what type of employment the alcohol overdose subject held. Other occupations held by illicit drug overdose subjects include: homemaker (n =1), and student (n = 2). One illicit drug overdose subject was listed as unemployed at the time of his death, and in another, the coroner was unable to establish the type of work the decedent

held.

Sex

The over representation of males -- both in alcohol and illicit drug deaths -- is almost universal. In a study of alcohol deaths in Scotland, Clark (1988: 106) reports that "just over two-thirds were male and one third were female", while Kringsholm (1988), in a study of illicit drug deaths in Denmark, reports that 80% were male and 20% female. Similar findings have been reported by Parker et al., (1988) in England, Kringsholm & Christoffersen (1982) in Copenhagen, and Kubo et al. (1991) in Germany. In this study the sex ratio of both kinds of decedent was identical: 73% (n = 11) were male and 27% (n = 4) were female.

Age

One of the major demographic differences found in studies of alcohol and illicit overdoses is age. Alcohol overdose subjects are, on average, older than most illicit drug overdose victims. Clark (1988) reports that the typical alcohol overdose decedent in his study was 56 years old, while Kringsholm (1988) reports that the typical illicit drug overdose decedent in his study was 31 years old. Similarly, the average age of the alcohol overdose subject in this study was 40 (range 26 - 65), while the average age of the illicit drug overdose subject was 34 (range 19 - 65).

Marital Status

Many alcohol overdose subjects (n = 9, 60%) and illicit drug overdose subjects (n = 7, 47%) were single at the time of their deaths. The remaining alcohol overdose subjects were either married (n = 2, 13%) or divorced (n = 4, 27%). The remaining illicit drug overdose subjects were either married (n = 5, 33%), separated (n = 1, 7%), or divorced (n = 2, 13%).

Events Prior To The Overdose.

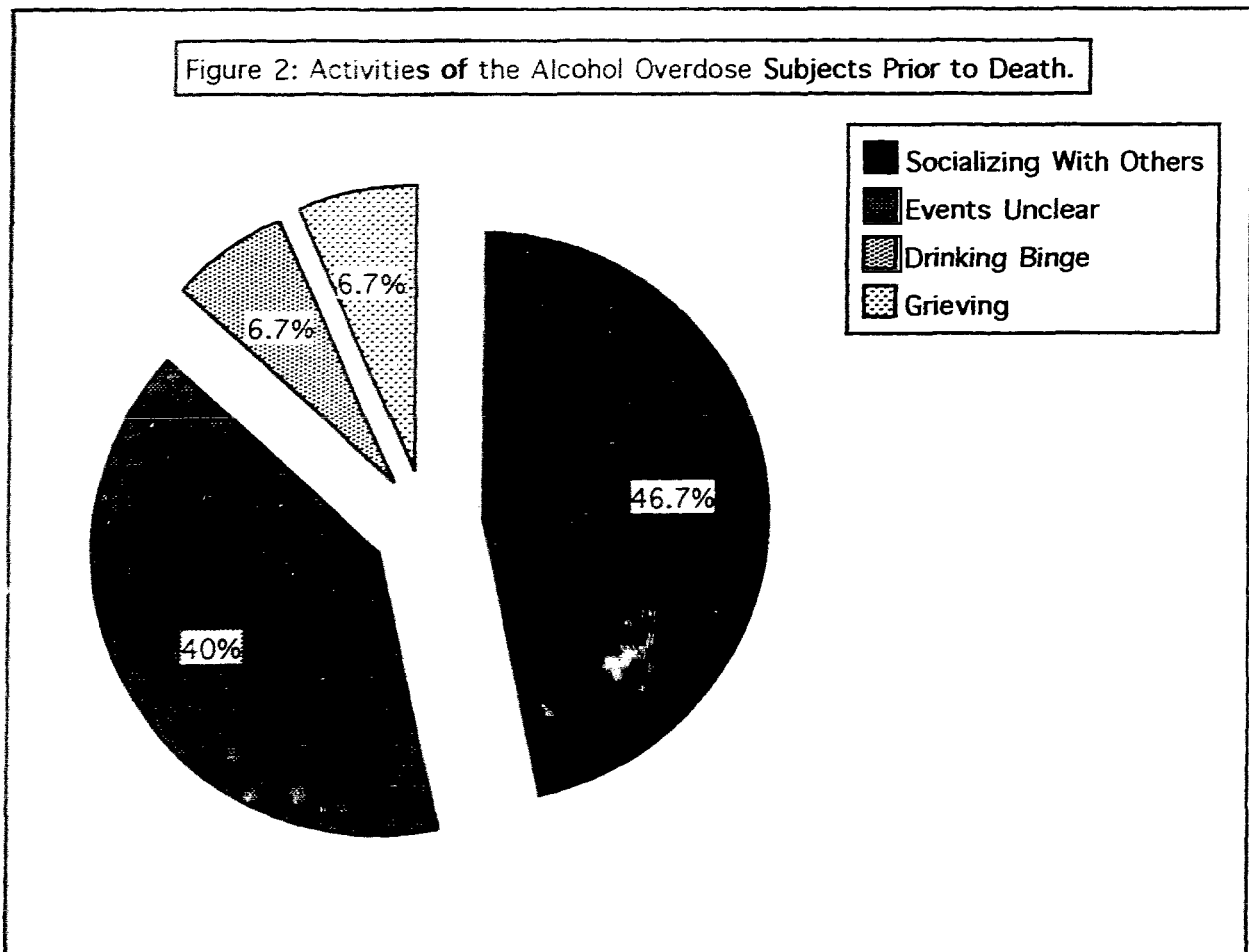
Coroners are assisted in their investigation of these deaths by police officers through their investigation of the scene of the death, and interviews with friends of the decedent. As criminal investigators, however, police officers are often more concerned with determining whether foul play or a crime was involved, than in providing a comprehensive social portrait of the decedent. This means that in some cases details surrounding these overdoses are unclear, including the events prior to the overdose. Police investigations are also often hindered by witnesses: some may be uncooperative for fear of attracting official attention to their own drug use, particularly if it involves an illegal drug. Others may be unable to supply useful information because of their own state of intoxication; for example, one police officer reported that: “[e]veryone present was partying quite hard and uncooperative when we arrived”. The events prior to the death may also be unknown because the decedent consumed their drugs alone. Finally, a significant number of decedents were described as “street people”, with no fixed address. In these cases, the context of the death is virtually impossible to establish.

The Alcohol Overdose Subject

Police investigations established that the largest portion of alcohol overdose subjects (47%, n = 7) were socializing or “partying” with others prior to their deaths (see *figure 2*), suggesting that for many, alcohol was one of the lubricants used in conjunction with recreation. Of these, 4 were described as “partying quite hard” or “drinking heavily” prior to the overdose. One decedent was partying well “into the early hours” with friends at a hotel the evening of his death; another was socializing at work with co - workers (the coroner explains that he “consumed an excess[ive] amount of alcohol ... [after] a challenge by a co-worker”); and in a third situation, the subject, along with a group of friends, “had been drinking alcohol since the early morning hours ... beside a shack” in the undeveloped part of town. The coroner reports that “this was a popular drinking location for the local indigents, as the open field and the gravel pit nearby were low traffic areas, hence their gatherings were seldom interrupted”. One death, ironically, occurred the day prior to the decedent’s scheduled detox. The coroner reports that he and his girlfriend “decided to have a celebratory drink prior to his admission”, and “drank most of a 26 ounce bottle of rum between them”. Needless to say, their celebration culminated in an overdose.

Coroners suggest that the other 3 alcohol overdose subjects socializing with others prior to their deaths did not appear to be partying to the extent that the ones described above were. Coroners report one subject was visiting with her boyfriend the evening of her death and, after drinking approximately 4 litres of alcoholized apple cider she was assisted to her bedroom “very intoxicated”.

She took three Ativans (i.e. lorazepam), went to sleep, and was discovered dead the next morning. Polydrug intoxications, especially involving C.N.S. depressants, are a frequent characteristic of overdose deaths (British Columbia, 1994; Levine et al., 1991; Penning et al., 1993; Puschel, 1992; Puschel et al., 1992). In another situation the decedent had been visiting with a friend, during which time he “consumed a not-known quantity of rum”. He was found unresponsive several hours later at home. E.M.S.⁹ was called, but he never regained consciousness.



In a significant number of alcohol overdose cases (40%, n = 6) the events prior

⁹ Emergency Medical Services.

to the overdose are unclear. In these cases it seems subjects either consumed their drugs alone (n = 3), or were found to be "street people" (n = 3). In both cases it is very difficult to ascertain a decedent's social history, including the events prior to death. Of those thought to have been consuming their drug alone at the time of their death, coroners report that one subject was discovered dead "sitting on a toilet seat in a public washroom. His body was leaning against the cubicle wall, fully dressed ...". In another, the coroner reports that the decedent's roommate told police he found the decedent lying on the floor and assumed that the decedent "had once again passed out while under the influence of alcohol". The roommate did not become concerned until the next morning, when he found his friend on the floor in the same position. In the last case, the coroner reports that the decedent was discovered unconscious at home by her husband, who indicates that she was also drinking alone. Of those described as "street people", coroners report that one subject was found by a passing citizen "lying unresponsive in the lane"; one was discovered in a parking lot in East Vancouver; and one was found in Oppenheimer Park, with "two empty bottles of Ginseng [brandy] ... next to the subject's body".

Police investigation established that one decedent had been "on a 30-day drinking binge" by himself; afterwards he suffered a cardiac arrest. E.M.S. were contacted and he was transported to the intensive care unit (I.C.U.) of the local hospital, where he remained unconscious for a week before dying.

In another situation it seems likely that the overdose was connected to grief over the death of a sister. Critical life events often promote a risky drug

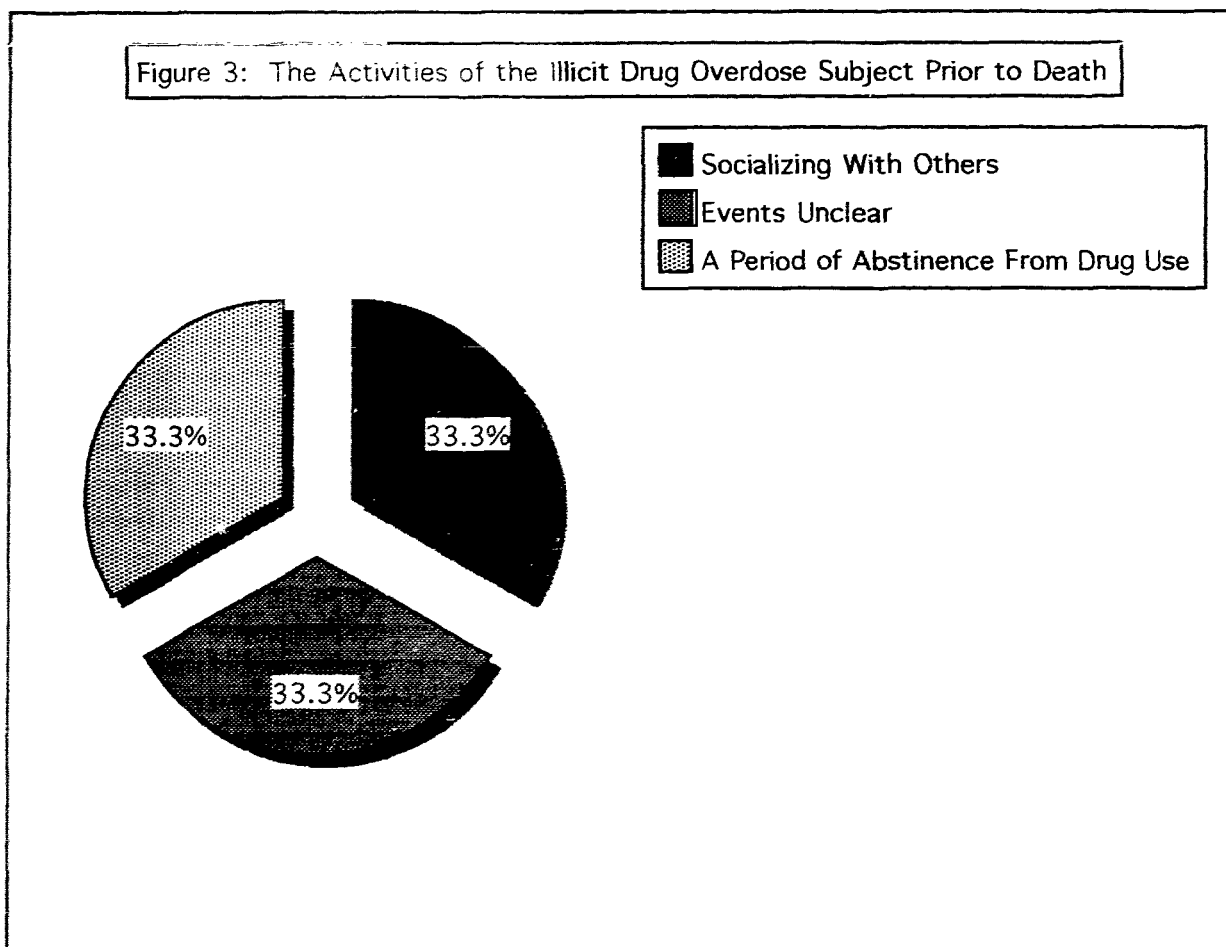
consumption pattern, and have been identified by drug researchers as a significant factor in many overdoses. Puschel et al. (1993) found that shortly before death a critical life event (e.g. death of a relative, loss of a job) preceded two-thirds of the drug overdoses they studied. Depression also frequently pre-dates drug abuse and drug overdoses (Weis et al., 1992). In this case the coroner states that the day of the death the decedent:

had been informed ... that his sister .. had been dead. [He] was next observed at approximately noon when he entered the hotel lobby. He appeared very impaired. He made his way to a bench, laid down and commenced to sleep. Within minutes he started to snore before falling off the bench to the floor. A short time later he was discovered not breathing and a phone call was made for assistance.

The Illicit Drug Overdose Subject

As with the alcohol overdose subjects, a significant portion (33%, n = 5) of illicit drug overdose subjects were socializing with others prior to their deaths. In these cases it seems the heroin (like alcohol) was a lubricant for recreation. Of these, coroners report that 4 appeared to be "partying hard". One "had injected heroin at 2200 hours and continued to consume alcohol until at least 0500"; another "had been drinking and using cocaine [with friends] during the evening and [into the] early morning hours prior to her death"; and another decedent reportedly consumed a large quantity of cocaine while partying with his roommates. He was found dead the next morning. The coroner reports one was partying with his wife at a friend's home prior to his death, where they eventually went to bed. Apparently, "at approximately 0620 [the next morning] their friend attended to the master bedroom to find both [the decedent] and [his wife] in bed unresponsive".

In one overdose situation the decedent did not appear to be partying. Rather, he “spent the evening visiting and watching T.V” with his girlfriend the evening of his death. His girlfriend told police that she went shopping during the evening, and upon returning, discovered “the bathroom door was locked and...was unable to get any response from her calls”. It may be that the subject was attempting to conceal his heroin use from his girlfriend; however, it is difficult to be sure. She called 911 emergency workers who “forced the bathroom door open and found [the decedent] slumped against the sink”. He was transported to hospital but never regained consciousness.



Illicit drug overdose subjects were also similar to alcohol overdose subjects in that in a significant number of cases (33%, n = 5) the police investigation was

unable to establish the activities of the decedent prior to their death. Again, in these cases it seems overdose subjects were either *alone* at the time of their death (n = 3), or were "street people" (n = 2). Of those who were probably alone while consuming, coroners report that one subject "was found lifeless, in a chair, at the kitchen table in her rented suite, by a son"; one was discovered "lying face down on the bed in the room" of a hotel; and one apparently lived and consumed their drugs alone. The coroner explains that the subject did not have a telephone, but "had an arrangement with his employer to be contacted through a neighbor who had a telephone". After receiving a call from the employer, the neighbor went to the decedent's house and discovered him "lying face up in bed ... covered with a quilt". After taking a closer look he discovered that "foamy like material was extruding from his [friend's] mouth and nostrils", and that he was obviously dead. Of those described as "street people", coroners report that one was found "collapsed forward over an old chair cushion" near the Georgia Viaduct in Vancouver; the other was discovered in a public parking lot. The coroner notes that a passing citizen "discovered the dead body of a female lying immediately in front of his vehicle, up against a solid wall" in a public parking lot. The similarities between the alcohol and the illicit drug overdose subjects are striking.

The death of five subjects (33%) followed a period of abstinence or withdrawal from drug use, a condition that has been reported by a number of drug researchers as a major contributing factor in the etiology of the heroin overdose (Krivanek, 1988). Three decedents had recently been released from a correctional facility, one from a "halfway house", and one was incarcerated

when his overdose occurred. Three of these decedents were also described by coroners as depressed at the time of their deaths -- again, a frequent symptom associated both with illicit drug and alcohol abuse.

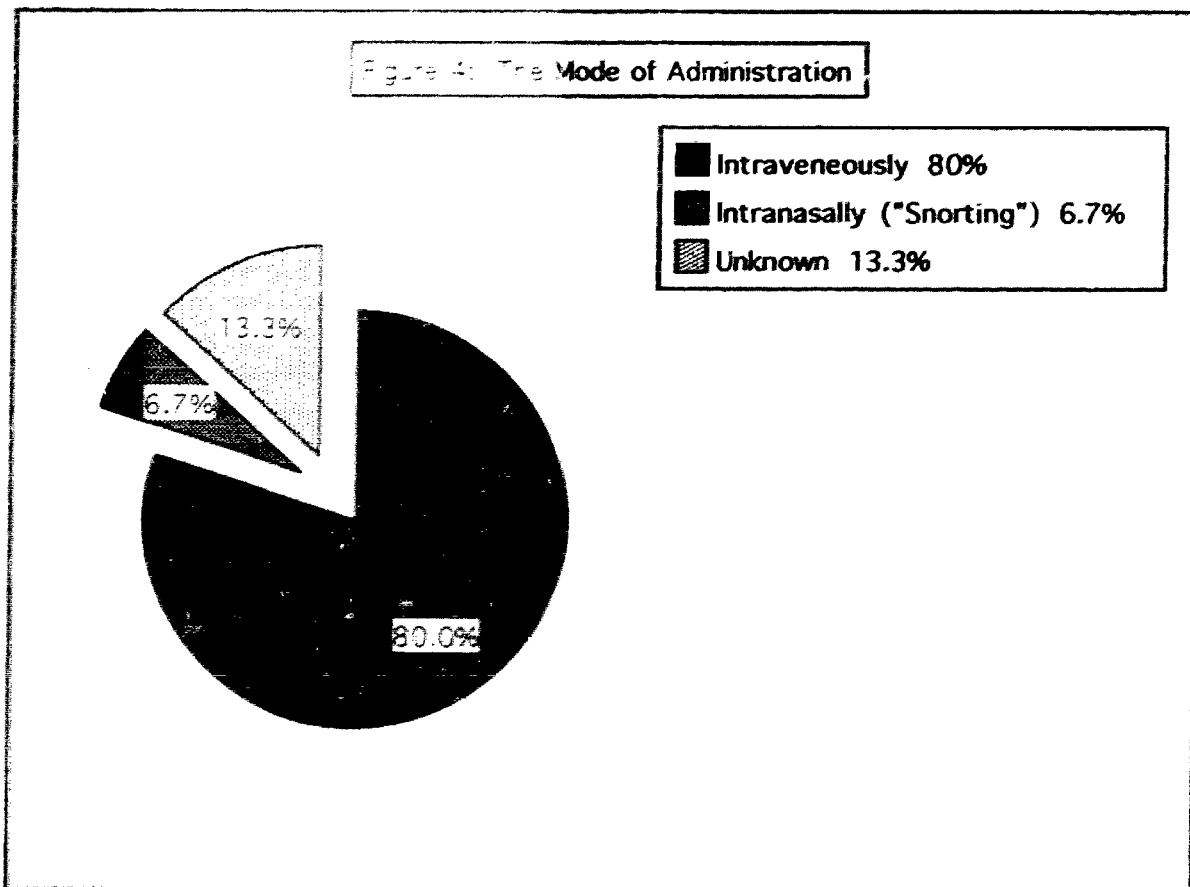
The development of tolerance (the physiological adaptation of the body to the effects of a drug) occurs after repeated exposure. Experienced heroin users can tolerate very high doses of heroin, "far beyond the lethal threshold for non-opiate users" (Alexander, 1990: 164). The same can be said about experienced alcohol users. Tolerance, however, decreases significantly during periods of abstinence or withdrawal from drug use. Ingold (1986) reports that recent withdrawal from drug use as a result of treatment, imprisonment, as well as self-imposed abstinence, is among the risk situations that may have contributed to death in as many as 40% of overdoses he studied. It seems a similar number of overdose cases in this study may also be explained, at least in part, by a loss of tolerance.

The Mode of Consumption.

Police investigating the overdose scene and pathologists conducting the autopsy provide information to the coroner concerning the mode of drug consumption. While alcohol is consumed orally, illicit drugs may be consumed in a number of ways. These include: oral consumption, intranasal consumption ("snorting"), intramuscular consumption, subcutaneous consumption ("skin popping"), intravenous (i.v.) consumption ("mainlining"), and inhalation (smoking). Oral ingestion is generally safest because it requires the drug (usually in capsule form) to become soluble in the stomach

and permeate the walls of the intestine before the effects of the drug can be felt. This may take several hours. Drugs already in liquid form, like alcohol, are already soluble and consequently they are absorbed faster.

The i.v. mode of consumption is by far the most dangerous mode of administering a drug because absorption is bypassed completely; the drug is delivered directly into the bloodstream where their effects are virtually instantaneous with injection (Riviere, 1994). The speed of absorption, however, is affected by numerous factors beyond the mode of administration, including the health of the user, and the presence of other drugs, factors discussed further on in the report. The mode of administration for the illicit drug overdose subjects is shown in figure 4.



Several studies have found that i.v. injection is the most common method of consuming heroin. In a study of heroin overdoses in Washington D.C., Rutenber & Luke (1984) report that "autopsy results indicate that decedents administered heroin almost exclusively intravenously", while Ingold (1986), in a study of illicit drug overdose deaths in Paris, determined that 80% involved the i.v. mode of administration. According to autopsy evidence reviewed in this study, i.v. ingestion is also the most common mode of heroin consumption in B.C. In 80% (n = 12) of the illicit drug overdoses pathologists suggest the decedent consumed their drug intravenously. In all but one of these cases pathologists discovered recent venipuncture sites on the body. In these cases the pathologist typically notes that "dermatologic assessment showed several recent needle tracks", or "there were venipuncture sites in the left antecubital fossa" or another area of the body. In one case the pathologist reports that there "were recent venipuncture sites in the right arm and on the right side of the neck in the region of the jugular vein".

In one case the coroner suggested that the decedent probably consumed the drugs intravenously since a build up of foreign material was found in the decedent's lungs. This material is a byproduct of the substances that are combined with drugs, such as heroin, when they are sold illicitly, and is not caused by the ingestion of the drug per se. Once added, they increase the volume (and therefore profitability) of these drugs. The coroner reports that while "the route of administration is uncertain ... the lungs, liver, and spleen ... all showed foreign body crystalline material consistent with chronic intravenous [illicit] drug abuse".

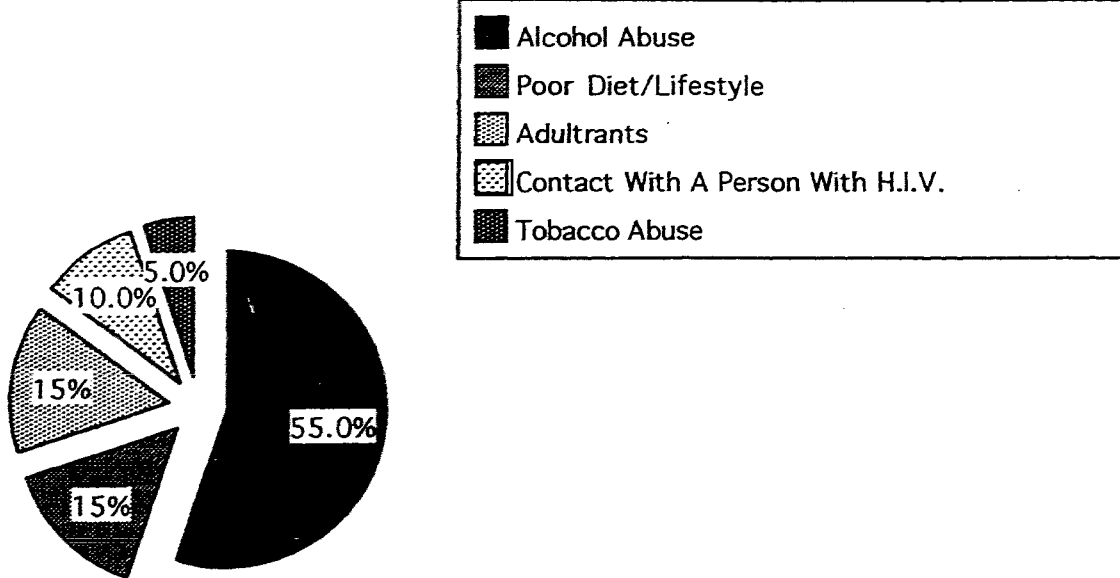
In another case police found “a mirror on a counter downstairs with some white powder on it and a rolled up piece of paper next to it”, suggesting that the decedent probably consumed the heroin intranasally since paper cylinders are often used to draw the drug into the nasal cavity. The pathologist was unable to find needle marks on the decedent’s body to indicate a history of i.v. drug abuse. In two cases the absence of syringes at the scene of the death, and a body free from needle marks, suggests that the drugs were consumed intranasally or by smoking.

Biomedical Context of the Overdose.

Very few overdose subjects are free of disease states or medical problems; in fact, 87% (n = 12) of the alcohol overdose subjects, and 80% of the illicit drug overdose subjects, suffered from some kind of medical pathology prior to death. In terms of the alcohol overdoses, chronic alcohol abuse was responsible for the largest portion (55%) of medical conditions diagnosed. Other medical pathologies associated with the alcohol overdoses were caused by the adulterants that illicit drugs are combined with (15%), poor diet and/or a sedentary lifestyle (15%), and tobacco abuse (5%). 10% of the disease states associated with the alcohol overdose subjects were caused by contact with a person with H.I.V. (i.e. sharing a needle, a blood transfusion, sexual contact).

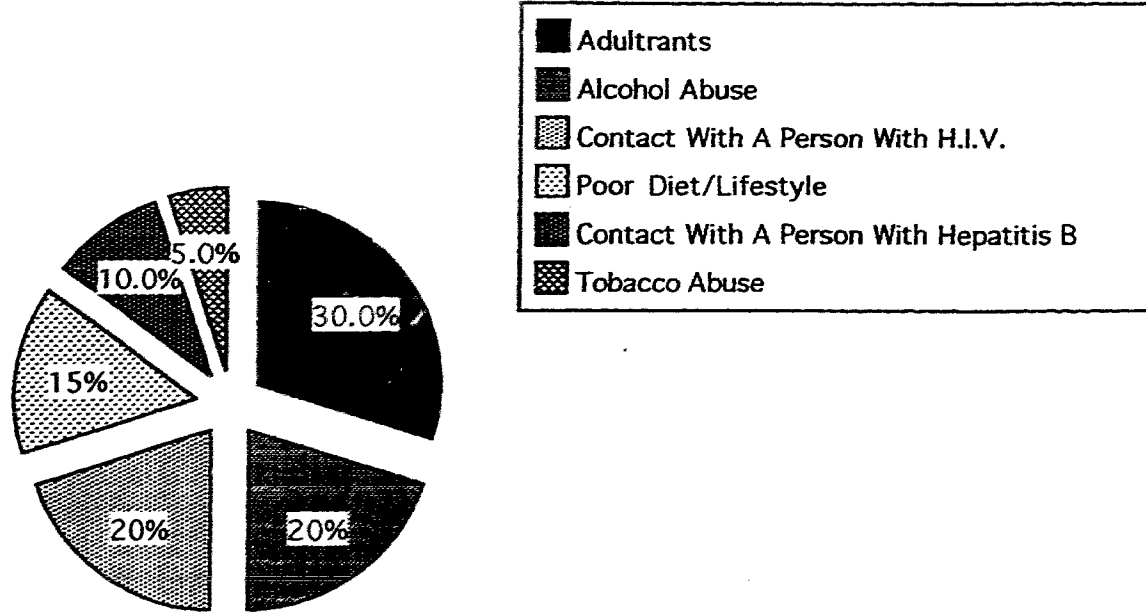
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Figure 5: Origin of Medical Pathologies - The Alcohol Overdoses.



In contrast, *none* of the disease states associated with the illicit drug overdose subjects were caused by the use of illicit drug per se; the largest portion (30%) were caused by the *adulterants* that drugs are combined with when sold illicitly. Other medical pathologies associated with illicit drug overdoses were caused by chronic alcohol abuse (20%), contact with a person infected with H.I.V. (20%) or hepatitis B (10%), poor diet and/cr a sedentary lifestyle (15%), and tobacco abuse (5%). The origin of the disease states associated with these overdoses are shown in *figures 5 and 6*.

Figure 6: Origin of Medical Pathologies - The Illicit Drug Overdose Subject.



Medical Conditions Attributed to Chronic Alcohol Abuse

Liver pathologies caused by alcohol abuse are common, both among alcohol and illicit drug users, and alcohol and illicit drug overdose subjects. In a study of liver sections obtained from 273 drug abusers Kringhsholm & Christoffersen (1982) report that 65% showed some kind of inflammatory liver disease. Keul et al. (1993), in a study of 53 cases of drug-related deaths, found that 75% of the decedents suffered from liver disease. These pathologies were attributed to either alcohol abuse, the adulterants combined with illicit drugs, or a virus (e.g. hepatitis B).

In my study, liver disease -- the most common medical condition diagnosed in the alcohol overdose subjects -- was found by pathologists in 73% (n = 11) of these cases. It is difficult to determine the length of alcohol abuse based solely on autopsy findings since the progression of these conditions is mediated in large part by diet, and other lifestyle choices. An alcohol abuser able to maintain a healthy diet and stay active is less likely to see these medical pathologies develop into major health problems than one who is not (Balch & Balch, 1990). Pathologists¹⁰ suggest, however, that 5 were suffering from the symptoms of *long term* alcohol abuse (i.e. likely 10 years or more), and 6 were suffering from *short term* alcohol abuse (i.e. likely 3 to 5 years). Short term medical complications caused by alcohol abuse diagnosed at autopsy include: "alcoholic liver disease with fatty change", and "hepatocellular steatosis". Long term medical complications include: "alcoholic hepatitis", "hemorrhagic gastritis", "pancreatitis", and "cirrhosis of the liver".

Liver disease attributed to alcohol abuse was also detected in a significant number of illicit drug overdose subjects (27%, n = 4), suggesting that more than one-quarter of these decedents had a history of alcohol abuse. One decedent suffered from early symptoms of alcohol abuse ("hepatic steatosis"); the rest (n = 3) were diagnosed with more extensive organ damage ("hemorrhagic gastritis", "pancreatitis" and "cirrhosis of the liver").

Medical Conditions Caused by the War on Drugs

The abuse of illicit drugs such as heroin, like the abuse of licit drugs like

¹⁰ These conclusions were reviewed by Dr. L. Gray.

alcohol, is associated with several disease states. These include liver, lung, and kidney pathologies. These conditions are commonly reported by forensic pathologists doing autopsies on drug overdose victims. Unlike alcohol, which can be pathological if consumed excessively over a long period of time, these conditions are *not* caused by anything intrinsic to illicit drugs such as heroin or cocaine. Instead, they result from substances that these drugs are diluted with when they are sold illicitly. Thus, they are more fairly described as diseases resulting from the *illegal status* that these drugs have in the context of the War on Drugs, than the drugs themselves. Had these drugs been consumed free of these adulterants, these medical pathologies would not have arisen.

Organ damage caused by the dilutents that illicit drugs are commonly combined with is a frequent condition detected in the illicit drug overdose subject. Kringsholm & Christoffersen (1982) report that lesions caused by heroin adulterants were present in 37% of the overdose subjects they studied. Similar postmortem findings have been reported by Richards et al. (1976), and Wong & Alexander (1991).

In this study these adulterants caused organ damage in 40% (n = 6) of the illicit drug overdose subjects, making them the most common medical pathologies associated with these decedents. As with alcohol overdose decedents, it is difficult to determine the length of drug abuse based solely upon autopsy findings. Pathologists suggest that five decedents exhibited autopsy evidence of chronic *long term* i.v. drug abuse (i.e., "foreign doubly refractile material" in the lungs, liver, and spleen; severe 'Junkie lung'). One

had "occasional crystals ... evident within the lung tissue". In this case the coroner notes that these findings suggest the decedent "was not a chronic and heavy intravenous abuser".

This kind of organ damage was also detected in 20% (n = 3) of the *alcohol* overdose subjects, suggesting that at least one-fifth of these decedents had a history of illicit i.v. drug abuse. In all three cases, the build up of the foreign doubly refractile material was found only in the decedent's lungs, indicating that these alcohol users probably had a shorter illicit drug abuse career than in cases where this material has spread to several organs (Kringholm & Christoffersen, 1982). It may be that these subjects were relative newcomers to the illicit drug scene; however, it is also possible that these decedents were injecting purer drugs, which would cause less organ damage (Campbell, 1995).

Other Medical Conditions

Poor dietary habits, in combination with a sedentary lifestyle, caused disease states¹¹ in an equal number of alcohol overdose subjects (20%, n = 3), and illicit drug overdose subjects (20%, n = 3). In alcohol overdose subjects these include disease states of the circulatory system (atherosclerosis, high blood pressure/cardiomegaly), and the digestive system (nephrosclerosis, kidney stones). In illicit drug overdose subjects these also included pathologies of the circulatory system (atherosclerosis, coronary artery disease), and the

¹¹ Of these, poor diet is probably the most significant factor in the etiology of these conditions; inactivity, and stress, are believed to be contributing factors (Balch & Balch, 1990; Chopra, 1993; Nuland, 1995).

digestive system (sigmoid diverticulosis, cholesterolosis of the gallbladder). One alcohol overdose subject was diagnosed with "chronic obstructive lung disease", while one illicit drug overdose subject was diagnosed with the "bilateral centrilobular emphysema". Both are caused by chronic tobacco abuse.

Other disease states diagnosed in decedents include H.I.V., detected in 13% (n = 2) of the alcohol overdose subjects, and 27% (n = 4) of the illicit drug overdose subjects. Hepatitis B was diagnosed in 13% (n = 2) of the illicit drug overdose subjects, but none of the alcohol overdose subjects. These conditions may be acquired through sexual contact, blood transfusions, or the use of contaminated needles. Many i.v. drug users are especially at risk for acquiring these disease states because they share their needles with other i.v. drug users when they are unable to source their own. These pathologies are particularly significant in terms of the overall health of alcohol and illicit drug abusers because they tend to weaken the body's response to other infectious diseases, placing them at further risk of acquiring more infectious, and potentially lethal diseases. "That is why infectious diseases, next to the effects of intoxication, play a central role in life-threatening complications for drug addicts" (Baumgarten, 1993: 68).

Establishing the Decedent's History of Drug Use.

Coroners reconstruct a decedent's history of drug or alcohol use, in part, through interviews with those who knew the decedent (e.g. friends, family, treatment personnel), and/or from autopsy evidence in the form of organ

damage. Based upon this evidence coroners indicated that most alcohol and illicit drug overdose subjects had an extensive history of alcohol or illicit drug abuse: 93% (n = 14) of the alcohol overdose subjects had a history of alcohol abuse, and 87% (n = 13) of the illicit drug overdose subjects had a history of illicit drug abuse. In addition, 40% of the alcohol overdose subjects (n = 6), and 47% (n = 7) of the illicit drug overdose subjects had a history of *both alcohol and illicit drug abuse*, suggesting that polysubstance abuse is a problem for a significant number. This inference is supported by toxicological data, reviewed in the second part of the chapter.

Alcohol and the Alcohol Overdose Subject

In most alcohol overdose cases (n = 10) interviews with those who knew the decedent helped to establish that the decedent had a history of alcohol abuse. In these cases the coroner will typically note their "investigation revealed that the decedent had a history of alcohol abuse", the decedent "suffered from chronic alcoholism", or the decedent had "a well documented history of alcohol abuse". In one case, the coroner indicates that the decedent "was a chronic alcoholic with many admissions to hospital for alcohol intoxication", while in another friends of the decedent "all agreed that he had been a particularly heavy binge drinker". Unfortunately it is difficult to determine how *long* the decedent was abusing alcohol or the degree of abuse; terms such as "alcoholic", and "binge drinker", as well as phrases such as "a history of alcohol abuse", may conjure up different images to different people -- one person's "alcoholic" may be another's "social drinker". Organ damage caused by alcohol diagnosed at autopsy provided a separate index of the

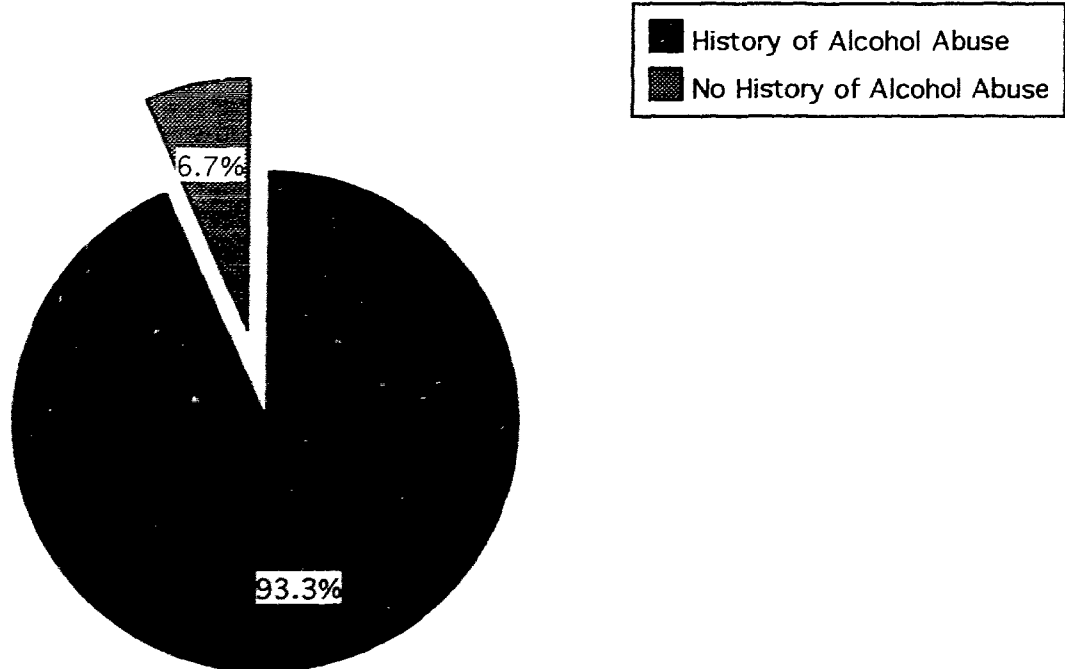
overdose subjects' history of alcohol abuse in most (n = 8) of these cases.

In five cases, or 33% of the sample, autopsy findings indicate that the decedent likely had a *long term* history of chronic alcohol abuse. Organ damage was severe. Three of these decedents were diagnosed with cirrhosis of the liver, a condition that typically takes several years to develop. In the other, the coroner states:

This was not a healthy woman. Her liver was significantly enlarged for her stature, weighing approximately twice that expected due to massive accumulation of fat within the liver cells. Superimposed on this more chronic process was an acute alcoholic hepatitis.

In 3 cases, or 20% of the sample, autopsy evidence suggests *short term* alcohol abuse. In one case the pathologist found a "mild hepatomegaly associated with mild macro vesicular hepatocellular steatosis". In another, the pathologist indicates that the decedent had "alcoholic liver disease", describing the decedent's liver as "enlarged [with] fatty metamorphosis of a type most frequently associated with alcohol abuse". The pathologist notes that another decedent had an "enlarged fatty liver ... supporting his prior history of alcohol abuse".

Figure 7: Alcohol Overdose Subjects' History of Alcohol Use.



In four cases coroners were unable to establish that decedents had a history of alcohol abuse from those who knew them; however autopsy evidence indicates that the decedent must have. The coroner explains that the decedent's liver was:

significantly enlarged and showed severe fatty degeneration of a type virtually diagnostic of chronic alcohol abuse. There was also scarring of the pancreas, a condition also associated with chronic alcoholism.

In two cases the coroner explains that "examination revealed fatty degeneration of the liver, associated with chronic alcohol abuse". This suggests that the decedent's history of alcohol abuse was likely shorter than in cases described above with more extensive organ damage (i.e. pancreatitis,

cirrhosis) was diagnosed. In another case the coroner found "a moderate degree of fatty degeneration in the liver frequently associated with chronic alcohol abuses [but] there was no stigmata of alcoholism in the other organs".

While interviews with those who knew the decedent and autopsy evidence did not indicate that the one remaining decedent had a history of alcohol abuse, autopsy evidence suggests that he had a history of illicit i.v. drug abuse. The pathologist reports that foreign material was found in the lungs ("Junkie Lung"), a common sign of illicit i.v. drug abuse. A number of syringes were also discovered at the scene of the death.

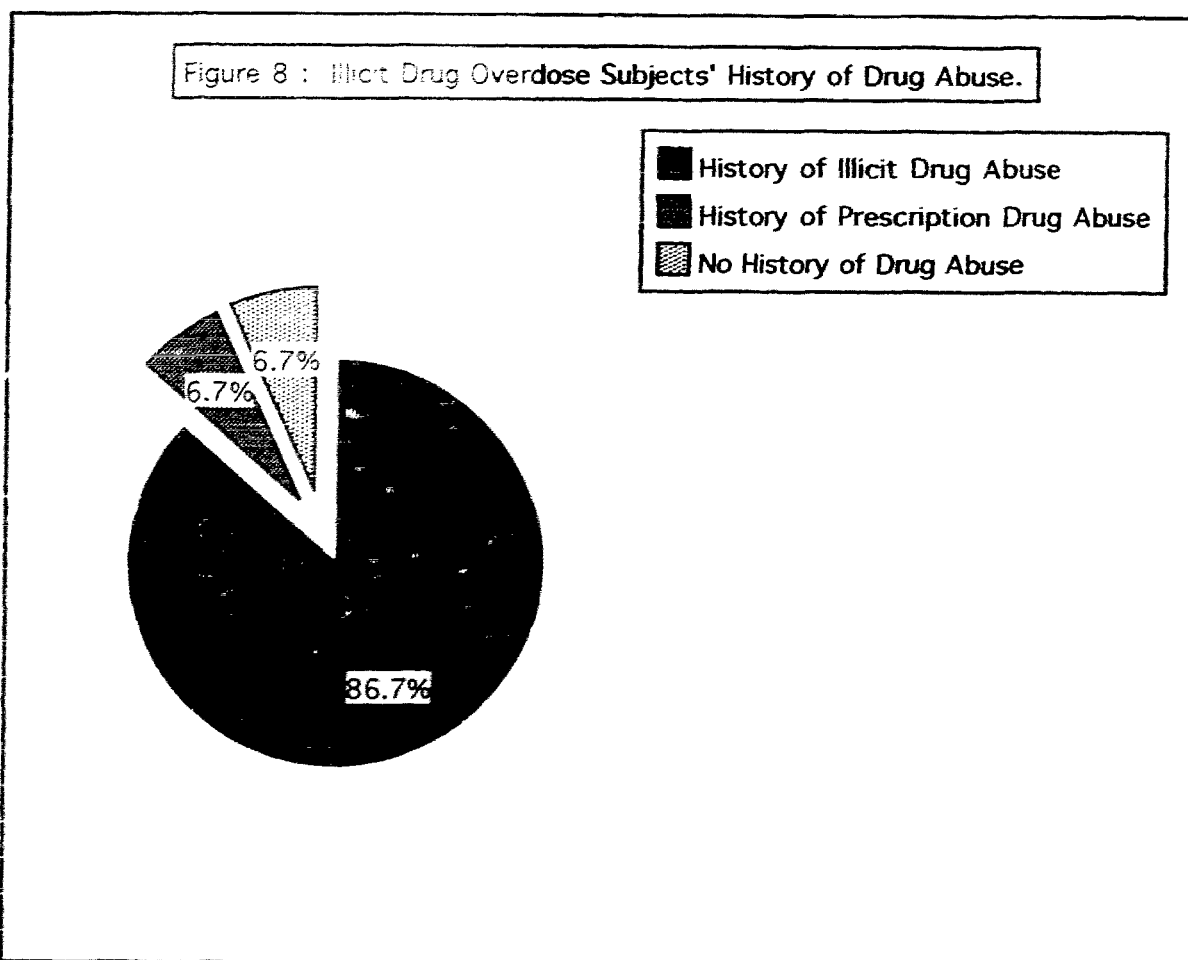
Illicit Drugs and the Illicit Drug Overdose Subject

Coroners were able to establish that 87% (n = 13) of the illicit drug overdose subjects had a history of "drug abuse". It is not always clear, however, *which* drugs the decedents were using. Coroners typically describe decedents as "having a longstanding history of chronic drug ... abuse" or "known to abuse drugs", without describing the types of drugs they are referring to. Autopsy evidence indicates however that most decedents were i.v. drug users (n = 10), suggesting that most likely had a history of heroin abuse.

The most common autopsy evidence indicating that the decedent was an i.v. drugs user is "Junkie Lung". Pathologists found organ damage caused by the substances heroin is combined with in 7 cases. The following description is typical:

The route of administration is uncertain, but the lungs, liver and spleen on microscopic examination all showed foreign body

crystalline material consistent with chronic intravenous drug abuse.



In one case, autopsy evidence indicates that the decedent had a short history of illicit i.v drug use. The pathologist reports that:

... there was no foreign doubly refractile material in the liver or spleen, but occasional crystals were evident within the lung tissue indicating that this man was not a chronic and heavy intravenous abuser of drugs".

The coroner's investigation indicates that two other decedents likely had a history of narcotic abuse. In one case the decedent had recently been released from a halfway house for heroin abusers; in the other the coroner notes that "friends of the deceased admitted he was a known abuser of

narcotics". In both cases needle marks were evident on the bodies of the decedents.

The coroner's investigation established that one decedent was probably not a regular illicit drug user; however he appears to have had a history of benzodiazepine drug abuse. According to police investigations the subject:

was a known user and dealer of various drugs within institutions though he was not thought to be a heavy user of "hard drugs" such as heroin or cocaine. In a random urinalysis ... he had tested positive for benzodiazepines but was negative for opiates and THC¹².

In another case the coroner's investigation was unable to establish that the decedent had a history of any i.v. drug abuse. There was no evidence of "Junkie Lung" or needle marks. Interviews with friends of the decedent and evidence at the scene of the overdose indicated that he used alcohol, however there is no indication that he had a history of alcohol abuse.

PART TWO: DRUG TOXICOLOGY

Introduction.

In this section I compare postmortem drug toxicology data gleaned from 375 alcohol overdoses, and 654 heroin overdoses. All of these deaths occurred in B.C. between 1984 and 1993. This comparison includes a discussion of the most common *drugs* involved in these deaths, and a review of their *postmortem concentrations*. These toxicological data indicate that a significant portion of alcohol overdose subjects, and almost all heroin

¹² Short for delta - 9 - tetrahydrocannabinol, the active ingredient in marijuana.

overdose subjects, were polysubstance abusers.

Types of Overdoses.

Toxicology data in the coroner's files indicate that between 1984 and 1993 35% (n = 130) of the alcohol overdose deaths (*see figure 9*), and virtually all the heroin overdose deaths (92%, n = 589) involved the use of more than one drug (*see figure 10*). Drugs involved in these deaths include those available over-the-counter, by prescription, or only illicitly. In total, 46 different drugs were detected in the alcohol overdose subjects, and 49 different drugs were detected in the heroin overdose subjects. These drugs exert a range of pharmacological effects, but can be separated into two general classifications¹³: (1) central nervous system depressants and (2) central nervous system stimulants. Both kinds of drug may elevate the chances that a fatal drug intoxication will occur.

Central Nervous System Depressants Involved in the Overdose.

The most common drugs involved in both alcohol and heroin overdoses depress central nervous system (C.N.S.) activity. This is especially significant in terms of understanding the cause of these deaths because these drugs act *additively* or *supra-additively* when combined with alcohol, heroin, or any other C.N.S. depressant. Consequently, toxic reactions -- including an overdose -- can result from even *moderate* levels of these drugs when these

¹³ The action of many drugs is not restricted to one effect. Dose, psychological state, and the presence of other drugs may all influence the effect a drug produces. This classification system is based on one used by Julien (1992).

drugs are combined. In one heroin overdose the coroner makes this clear by reporting that while *none* of the drugs in the decedent's body were detected in excess of the established lethal level (including the heroin), "their combined effect, particularly with respect to C.N.S. depression of respiration may have contributed to death".

The Role of C.N.S. Depressants Available by Prescription

According to a number of studies, prescription drugs that depress C.N.S. activity have become an increasingly significant factor in the etiology of the illicit drug death. In a study conducted in Germany, using toxicological data from three cities (Berlin, Bremen, Hamburg), Schmoldt et al. (1993) report that in the heroin overdose cases barbiturates were detected in 9%, codeine was detected in 13%, and benzodiazepines (mostly diazepam and flunitrazepam) were detected in 17%. Penning et al. (1993: 138) report that codeine was involved in 43% of the drug overdoses that occurred in Bavaria between 1981 and 1992, noting that it "proved to be a major cofactor of a polyintoxication".

Valium

Valium belongs to the family of drugs referred to as benzodiazepines. These drugs are tranquilizers, and are among the most popular drugs prescribed by physicians for the treatment of symptoms of anxiety, the most common complaint reported by clinicians (Julien, 1992). They are also used in the treatment of alcohol withdrawal. Benzodiazepines may also be obtained

Figure 9

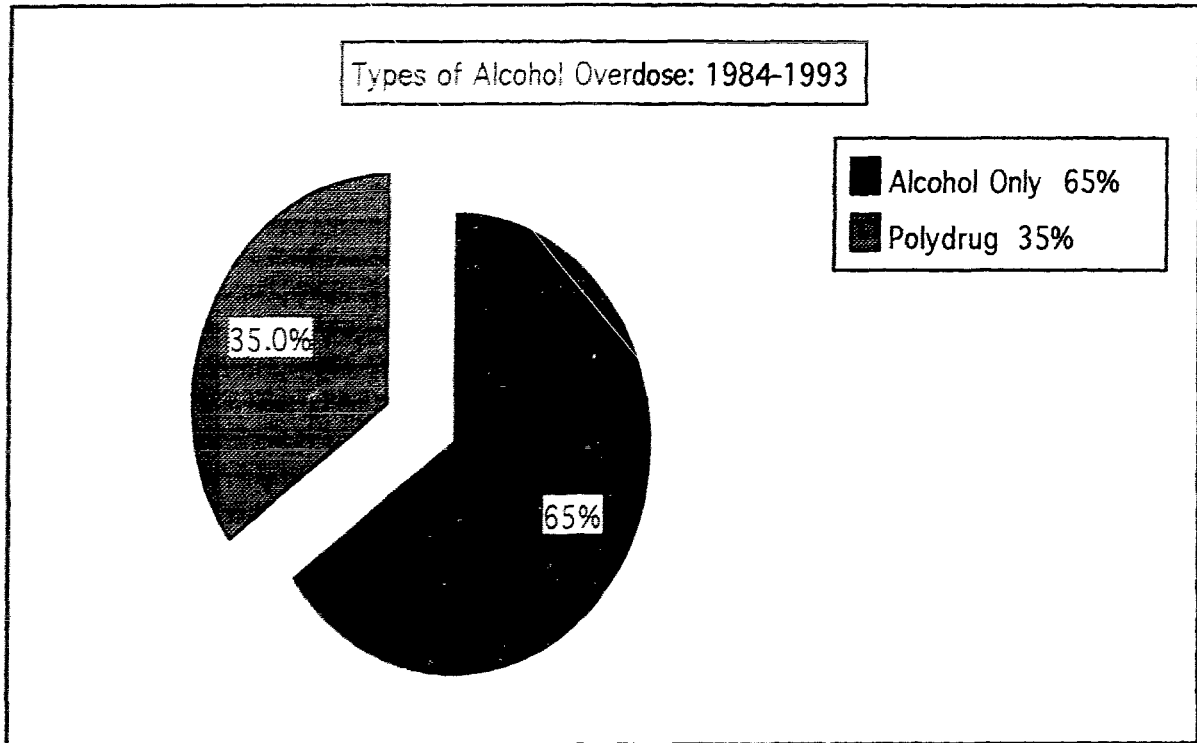
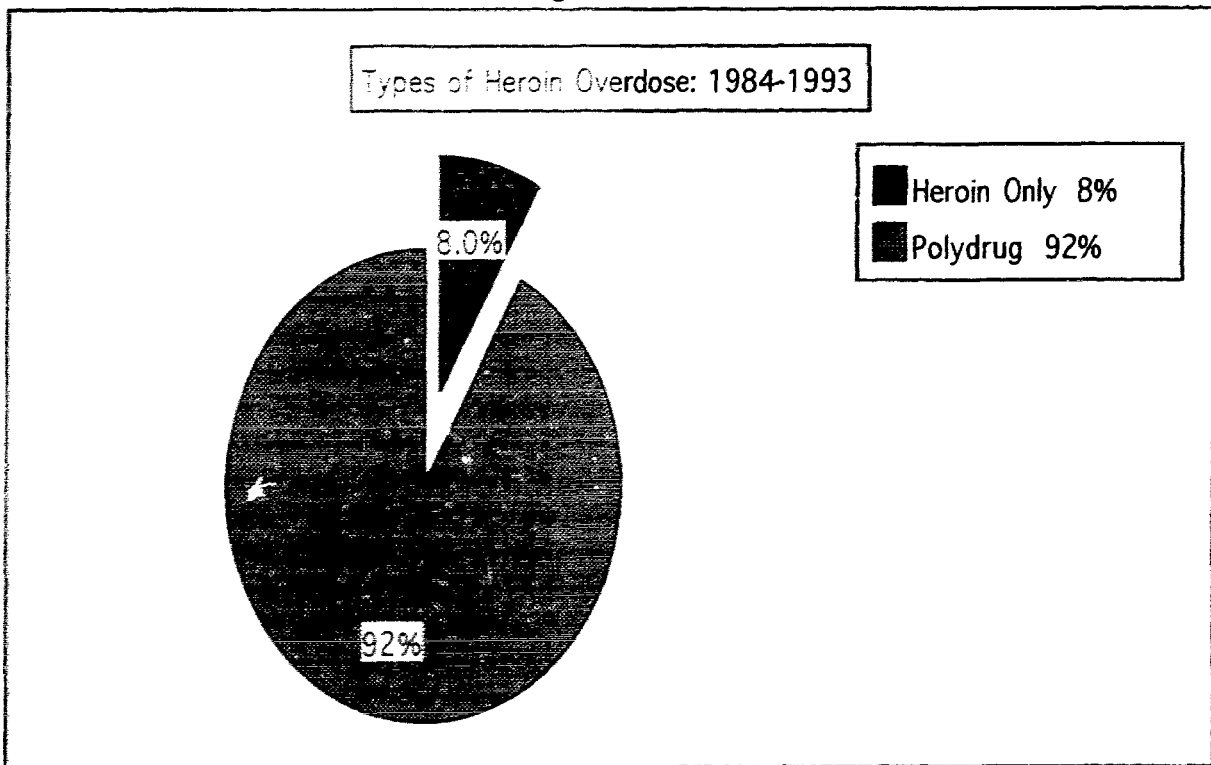


Figure 10



illicitly, and are sometimes used to relieve the anxiety that often accompanies the heavy use of amphetamines or cocaine . While these drugs rarely cause negative side effects or overdoses when consumed *alone*, chronic use of benzodiazepines in *combination* with other drugs can produce severe problems, as well as fatal overdoses (Baselt, 1983; Chilnick, 1991). Combining valium and alcohol is especially dangerous because alcohol *potentiates* valium's depressant effects (Julien, 1992). Overall, Valium was detected in a significant percentage of heroin overdoses (16%, n = 106), but very few alcohol overdoses (5%, n = 20).

Codeine

The second most common prescription C.N.S. depressant involved in the heroin overdose was codeine, detected in 11% (n = 70) of these decedents. Other drugs involved in the alcohol overdose were involved in less than 5% of the cases, and are not included in this analysis.

Alcohol

The most common C.N.S. depressant involved in the heroin overdose was alcohol, detected in 54% of these cases. These toxicology findings are similar to ones reported by several drug investigators, both in North America and Europe. Puschel (1993) reports that about 40% of the heroin overdose decedents he studied in Germany tested positive for alcohol; Kringsholm (1988: 147), in a study of drug overdoses that occurred in Denmark, reports that "alcohol was found in approximately 50% of the cases each year"; and

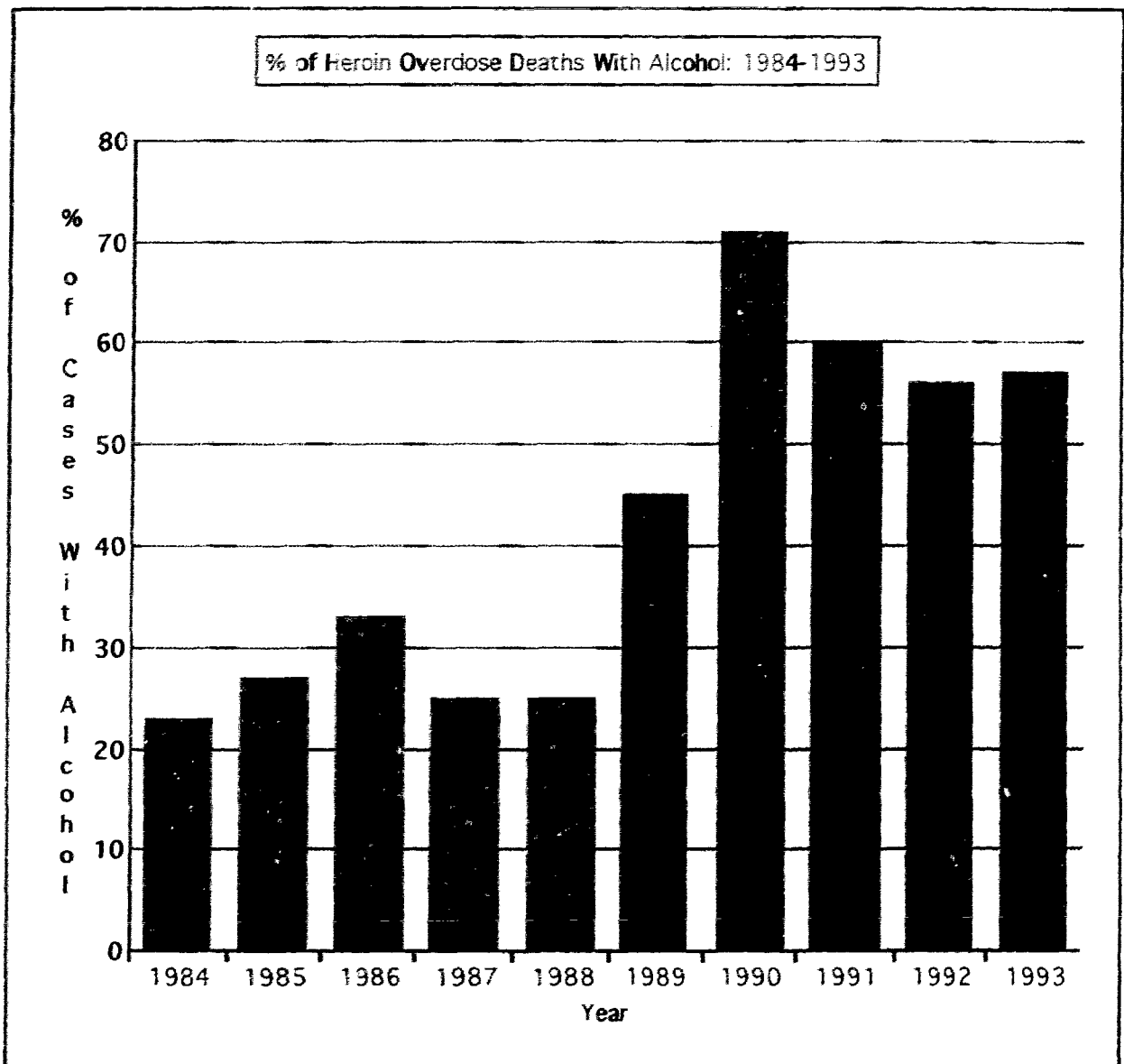


Figure 11

Ruttenber et al. (1990), in a study of heroin overdoses in Washington, D.C., found that alcohol was involved in 66% of the overdoses. All of these authors suggest that alcohol, because of its ability to add to the depressant effects of heroin, is a contributing factor in the etiology of many heroin overdoses.

Compared to all the other drugs associated with the heroin overdose, alcohol's presence has also increased the most between 1984 and 1993 (see

figure 11). In 1984 alcohol was detected in 23% of these cases, and with few exceptions, has climbed ever since. In 1993 it was detected in the blood of more than half (57%) of all heroin overdose decedents.

The Role of Central Nervous System Stimulants in the Overdose.

C.N.S. stimulants may also have been contributing factors in a significant portion of the heroin overdoses, having been detected in the blood of 38% (n = 248) of these decedents. They were not, however, factors in the vast majority of alcohol overdoses, having been detected in only about 2% (n = 8) of them. Half the stimulants involved in the alcohol overdose cases (n = 4), and virtually all of the stimulants involved in the heroin overdose cases (n = 245, 38%) were cocaine. Cocaine's involvement in the heroin overdose has fluctuated between 1984 and 1993. It was not detected in any of the overdoses that occurred in 1985, but was associated with between 8 and 51% of these overdoses in other years. Like alcohol, there has been a general increase in the percentage of heroin overdoses involving cocaine over the period under study. Cocaine's prevalence in the heroin overdose is shown in *figure 12*. Other drugs that stimulate the C.N.S. detected in both cases include antidepressants¹⁴. and drugs prescribed for asthma or emphysema¹⁵.

¹⁴ Amitriptyline, trimipramine.

¹⁵ Theophylline.

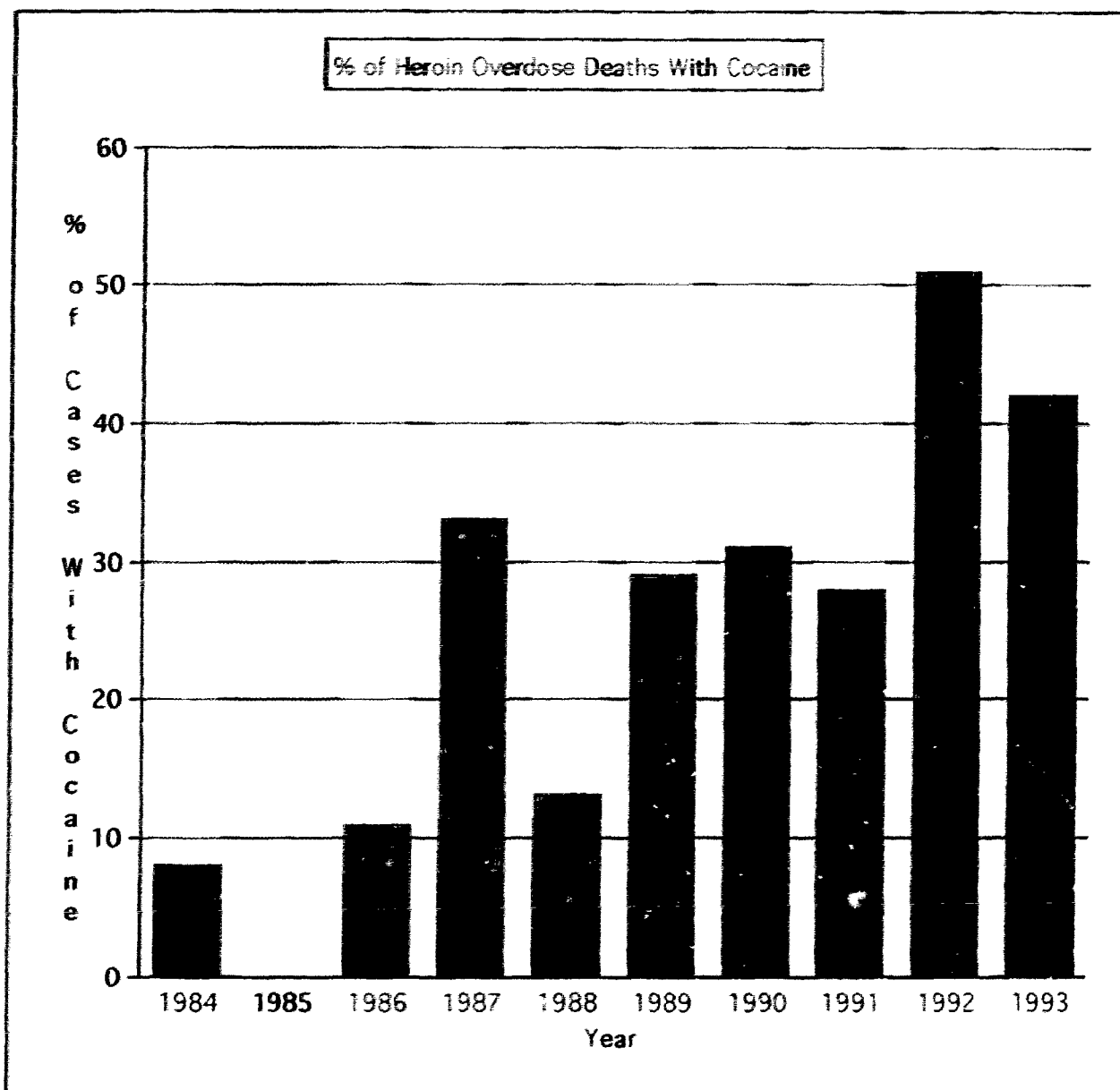


Figure 12.

A New Danger: Cocaethylene.

Simultaneous consumption of alcohol and cocaine, a popular habit, is especially dangerous. This is because the interaction of these two drugs in the body produces a *third* drug, cocaethylene, much more toxic than either of these drugs consumed alone (Hearn et al., 1991a). One coroner reports that:

Cocaethylene is more addictive than the parent drug and significantly more lethal, and it remains active in the body

for many hours after the trace of cocaine has diminished. The simultaneous administration of cocaine and alcohol through the pharmacological actions of cocaethylene, appear to promote additive or synergistic effects ...

It is difficult to determine the role cocaethylene might play in many of the heroin overdoses because prior to 1992 the Provincial Toxicology Centre did not screen for it (Huckin, 1995). Since 1992 cocaethylene was detected in either the blood or urine of approximately 8% (n = 32) of the heroin overdose cases.

Postmortem Levels - Heroin, Alcohol, and Cocaine.

The Heroin Overdose

The average blood *morphine* concentration (the metabolite of heroin measured by toxicologists) detected in the heroin overdose subjects was .35 milligrams per litre of blood (range 0.0 to 9.70 m.g.). This average is seven times the minimum established lethal level (.05 milligrams). Use of the average morphine concentration is deceiving, however, since a small number of extreme scores (n = 26, or about 4% of the sample) showed extremely high morphine concentrations, ranging from 1.00 to 9.12 milligrams. At least 15% (n = 4) of these cases involved suicides¹⁶. Without these scores the average blood morphine concentration was .25 milligrams. While this means that the typical heroin overdose subject had a morphine concentrations five times the established lethal level, research suggests that

¹⁶ While the majority of these cases were labeled accidents (n = 19) the suicide criteria employed by coroners likely results in some deaths being mislabeled. There must be explicit evidence (i.e. a suicide note) indicating the intentions of the individual. A history of suicide attempts is not sufficient to define a death as a suicide.

experienced heroin users (which, according to the findings of this study, make up the bulk of heroin overdose subjects) can tolerate concentrations in excess of this level. For example, Baselt et al. (1975) found postmortem morphine concentrations as high as .30 milligrams in subjects dying from causes other than an overdose. They suggest that this level is likely not lethal for heroin users who have developed tolerance as a result of repeated exposure to the drug. Since the majority (70%, n = 461) had a morphine concentrations less than or equal to .30 milligrams, it is likely that factors in addition to the drug, such as the interaction of other drugs and existing medical conditions, were also contributing factors in many of these deaths. These issues are explored further in the Concluding Chapter (chapter four).

The average blood *alcohol* concentration detected in the heroin overdose subjects was .14 milligrams per liter of blood (range .01 - .53%). These findings are significant in terms of etiology because alcohol levels of .10% or higher have been found to be major contributing factors in the heroin overdose (Levine et al., 1995; Rutenber & Luke, 1984; Rutenber et al., 1991). *Figure 13* shows the percentage of heroin overdoses with .10% alcohol or higher in the blood at death. Alcohol's role in the heroin overdose is also explored further in the Concluding Chapter.

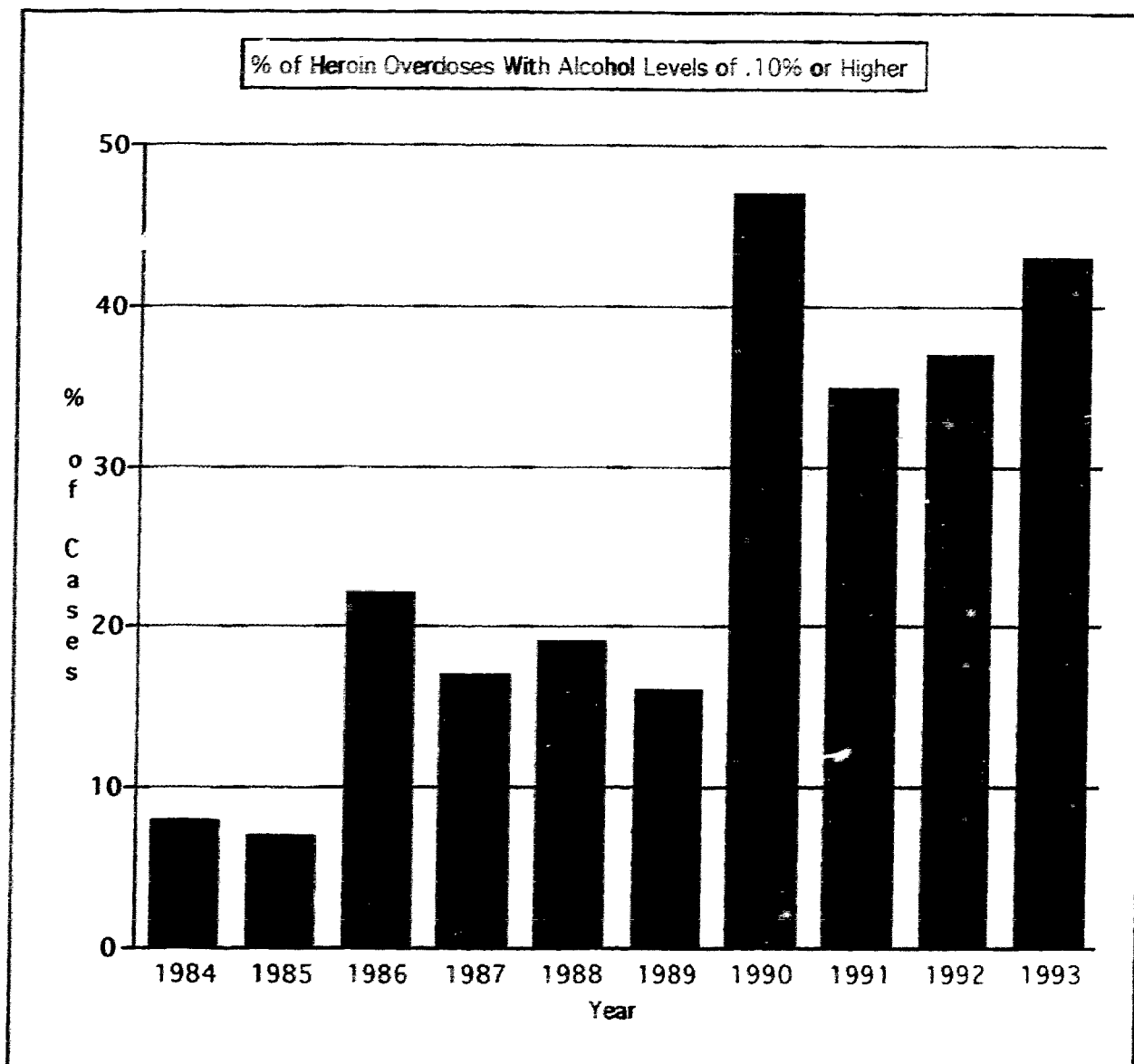


Figure 13

The minimum lethal level for cocaine consumed intravenously is 1.0 milligrams; consumed orally it is 11.90 milligrams. This, unfortunately, presents a major problem of interpretation for coroners in cases where the mode of administration is not known. Coroners generally assume that the cocaine was consumed intravenously in cases where scene circumstances suggest the decedent was an intravenous heroin user. It is not always

possible however to rule out other forms of administration such as insufflation (snorting). For example, it is possible that the subject consumed the heroin intravenously, and the cocaine by snorting.

The average *cocaine* concentration detected in the blood of heroin overdose subjects was 2.66 milligrams (range .03 - 67.84 m.g.). These figures, however, include the concentration of *benzoylecgonine*, cocaine's metabolite, since toxicologists normally add these together to estimate the amount of cocaine consumed prior to death. Since benzoylecgonine levels remain in the blood for longer periods than cocaine, it is not always possible to distinguish past cocaine use from current use (Wong & Alexander, 1991). Moreover, since benzoylecgonine is an inactive metabolite, it would not have contributed to death (Wong & Alexander, 1991). These issues are discussed in the Concluding Chapter.

The Alcohol Overdose

The average *alcohol* concentration detected in the blood of the alcohol overdose subject was .37% (range .01 - .91%), which is actually *below* the established lethal level of .50%. Only a *minority* (13%, n = 48) of subjects had alcohol levels equal to or in excess of the established lethal level. As with many illicit drug overdoses, it seems likely that existing medical conditions and/or the presence of other drugs, played a contributing role in these deaths. In a study of alcohol overdose deaths in Scotland Clark (1988) found that all decedents with a postmortem blood alcohol concentration below .32% suffered from "significant co-existing diseases, including ischemic heart

disease, bronchitis, and cirrhosis". Other drugs involved in the alcohol overdoses were detected in less than 6% of the cases.

CHAPTER FOUR: CONCLUSIONS

Recap.

The goal of this study was to present a comprehensive portrait of the nature and causes of overdoses attributed to both alcohol and heroin. My findings may surprise some. Contrary to public opinion, and based upon reports completed by the coroner and the toxicologist, alcohol can be just as toxic as heroin. And in situations where these drugs are being used compulsively or in an abusive fashion -- as in the case of the "alcoholic" or the "heroin junkie" -- heroin is considerably *less* toxic than alcohol. Despite the mythology that surrounds heroin and the stereotype of the "heroin junkie", heroin does not cause permanent physiological damage to the body. Thus, as Boyd (1993: 210) argues, "[t]here is an irony in our policies of control: we place costly criminal prohibitions on drugs that are less dangerous to us and we permit the promotion of drugs that are killing us".

As indicated in the Introductory chapter, support for the criminalization of heroin was gained after erroneous conclusions were reached about the pharmacological qualities of the opiates at the beginning of the century. Prior, the opiates were regarded as medical panaceas, as "God's own medicine". However, in a period characterized by a major moral reform movement, economic insecurities, and racial tensions, a mythology about these drugs emerged. The "dope fiend mentality", while based upon misinformation, quickly became salient in the popular imagination, and a popular justification for criminalization. It has, however, little scientific or medical support.

Myths surrounding heroin persist. Many believe that heroin turns people into

“members of the walking dead”, and that use translates into “death on the installment plan”. These conclusions (like those reached at the turn of the century) were formed, however, through a process of misattribution. Today many heroin users suffer from social, economic, medical, and legal problems; however *none* of these conditions can be fairly described as resulting from heroin use *per se*.

The Consequences of a Policy of Criminalization.

Most people now acknowledge that attempts to repress the use of alcohol through criminalization failed. Prohibition pushed the manufacture and distribution of alcohol underground, and criminal manufacturers combined “moonshine” alcohol with a slew of toxic substances (e.g. pyridine, benzene, nicotine, mercury) in order to increase its volume and profitability (Mitchell, 1991). This made it an extremely dangerous drug, and as a result, thousands were blinded, paralyzed, and killed after consuming it (Nadelmann, 1993: 42). Prohibition made alcohol extremely dangerous; the War on Drugs has done the same to heroin. Attempting to prohibit the use of heroin through criminal sanctions has had several negative consequences. These include: (1) making heroin more toxic and less pure; (2) encouraging more dangerous modes of drug administration; (3) increasing criminal activity; (4) fostering more dangerous polydrug habits; and (5) making users feel deviant, sick, or just plain bad. Criminalizing the drug also diverts attention from the full range of causes of these problems. These issues are explored in this chapter.

Heroin Has Become Extremely Toxic

The famous Swiss physician Paracelsus argued that "all substances are poisons; there is none which is not a poison. The right dose differentiates a poison from a remedy" (Cited by Eckert, 1980: 79). In the 19th century heroin was a remedy; today it is a poison. Prior to criminalization heroin was used to treat people; today it kills them. The difference is prior to criminalization the purity of the drug was controlled by legal businesses and physicians. Today the drug's purity is controlled by criminal syndicates, whose goal is profit, not the well-being of users. Users today have no reliable way of determining the dose they are consuming. Consequently -- and not surprisingly -- overdoses are common. As Nadelmann (1989: 942) remarks, diagnosing the problem is relatively straightforward: "nothing resembling an underground Food and Drug Administration has arisen to impose quality control on the illegal drug market".

In the context of the current War on Drugs a heroin user in Vancouver might "shoot up" with 9% heroin today, and 90% heroin tomorrow -- depending upon their source, and the vagaries of the illicit market. The consequences are frequently fatal. Imagine not being able to determine if the beer you were drinking contained 5% or 50% alcohol; if the wine you enjoy with your dinner contained 7% or 70% alcohol; or if the pain reliever you took for a headache contained 9 or 900 grains of aspirin -- and what the consequences might be if you were using these drugs.

Less than ten years ago heroin users in Vancouver were seldom able to

purchase heroin that was more than 6 percent pure -- and overdoses were about a tenth of what they are today. Increased availability, however, has helped to push up the average purity level of the drug. Between 1984 and 1993 the average purity of the drug available on the streets of Vancouver increased from about 6 percent to over 60 percent (Health Protection Branch, 1995; Provincial Toxicology Centre, 1994). Some coroners report purity levels exceeding 90%. These are some of the highest purity levels recorded in all of North America; they surpass those found in New York, the heroin capital of the U.S. (Sabbag, 1994). Not surprisingly, this seems to have had an enormous effect on the mortality of heroin users in the province: the annual number of overdoses attributed to heroin rose from 13 in 1984, to 302 in 1993 -- an increase of more than *twenty-three fold*.

Heroin is Being Combined With Toxic Substances

Not only do heroin users risk consuming a product of unknown purity, they have no way of determining what substances their drug has been mixed with to increase its volume and profitability. In the 19th century opiates were combined with benign ingredients, such as molasses and sassafras. Today, however, a user might inject heroin combined with acetaminophen and caffeine one week, antipyrine and benocaine the next, and lactose and procaine the week after. It is important to realize that these adulterants -- not heroin -- were responsible for the most common disease state associated with the heroin overdose subjects, "Junkie Lung".

More Dangerous Modes of Administration

A policy of criminalization, by making the drug periodically unavailable or prohibitively expensive, also seems to have entrenched the most dangerous mode of administering opiate drugs. When heroin is difficult to obtain, or expensive, users have been known to rely upon the most economical method of consuming it: the use of the hypodermic syringe. The needle has become the most common method of consuming the drug. Alexander (1990: 147) reports that after enforcement efforts by the U.S. army reduced the supply of heroin in Vietnam, soldiers began turning to the needle.

Refusing to fund needle exchange programs has also increased the dangers associated with using heroin by encouraging users to share their needles with others. This puts them at a substantial risk for acquiring several viruses, including Hepatitis B. and H.I.V., the virus believed to cause A.I.D.S. H.I.V. was diagnosed in 27% of the illicit drug overdose subjects. According to Dr. Michael Rekart (B.C.'s Director of Sexually Transmitted Disease Control) H.I.V. infections have increased in the province mostly because users are sharing contaminated needles (Wigwood, 1995). Similar conclusions have been reached by Liz Whynot, medical health officer for the Downtown Eastside of Vancouver (Wood, 1995). The percentage of seropositive tests in B.C. from i.v. drug users increased from 1 percent in 1988, to approximately 5% in 1994, and is still rising (Mattinson & Hawthorne, 1996: 25).

There is some good news, however. While the number of H.I.V. cases associated with i.v. drug users is increasing in Vancouver, according to the

Report of the Task Force Into Illicit Narcotic Deaths (British Columbia, 1994) needle exchange programs, such as the one operated by the Downtown Eastside Youth Activities Society (D.E.Y.A.S.), have helped to keep Vancouver's rate of H.I.V. infection (among i.v. drug users) the lowest of any major city in Canada. Given that Vancouver has the largest concentration of i.v. heroin users in Canada¹⁷, this is remarkable. In a political environment where virtually all social spending has come under attack, programs such as these continue to face operating challenges. This is unfortunate since the scientific evidence is very clear about needle exchange programs: they reduce the spread of the H.I.V. virus, and often accelerate entry into drug treatment programs (Heimer, 1995). Moreover, educating i.v. drug users about safe needle practices, and dispensing clean needles has helped to reduce the spread of H.I.V. in several countries in Europe (Byers, 1995; Nadelmann, 1996; Thornton, 1995; Watters, 1995). In Brazil, Buono (1995) reports that the recruitment of i.v. drug users to help reach out to hard-to-get users has been very successful; and the needle exchange program in Merseyside, England, has been credited with helping to keep that city's rate of H.I.V. the second lowest of all regions in England¹⁸ (Mattinson & Hawthorne, 1996).

Encouraging Membership in A Criminal Subculture

Today someone who uses heroin is automatically converted into a criminal;

¹⁷ In New York, the U.S. city with the largest population of heroin addicts, the incidence of H.I.V. conversions among i.v. drug users peaked at an estimated 60% before leveling off in 1984. (British Columbia, 1994: 18).

¹⁸ Mattinson & Hawthorne (1996) report that the rate of H.I.V. infection among i.v. drug users in Merseyside is 8 per million. This compares to a rate of 34 per million county-wide. In the northwest Thames region the rate of H.I.V. infection among i.v. drug users is 136 per million.

possession for personal use can lead to imprisonment. And by criminalizing heroin, users must forge an alliance with the criminal underground in order to obtain their drugs. The ramifications of the first situation are straightforward: it imprints a wider criminal identity among those who -- were it not for their use of heroin -- would have remained non-criminals. The ramifications of the second situation may be worse: it increases the likelihood that a user will participate in other criminal activity beyond the purchasing of illegal drugs. For, while studies indicate that many heroin addicts were involved in criminal activity prior to their heroin use, in most cases the criminal activity escalates once the user has been forced to regularly rely upon a criminal subculture to obtain their drugs (Beirne & Messerschmidt, 1991; Giffen et al., 1991; McGlothlin et al., 1978). Vancouver police report that about 60 percent of all non drug crimes (e.g. B & E's, car break-ins, armed robberies) are related to the purchase of illicit drugs (British Columbia, 1994). The criminal nature of the drug underworld also puts drug users at a higher risk of being victimized than the average citizen (Fattah 1991:277)

Despite these negative consequences, we rely upon the criminal law to deal with heroin users. In 1994, while the overall crime rate was down, the number of drug incidents recorded by police increased (Canadian Crime Statistics, 1994). Police also report that investigations of heroin dealers have more than tripled in the last several years (R.C.M.P., 1993). Law enforcement attempts to eliminate heroin, however, have been largely unsuccessful: detective Mike Carr, head of the Vancouver Police drug squad, reports that "heroin is nearly out of control in this city" (O'Brien, 1994: 38). The R.C.M.P. (1993) report that despite international interdiction attempts, worldwide opium

cultivation has reached "unprecedented levels". They note that they are lucky to seize 5 percent of the heroin that enters the country.

After several months of investigating the heroin overdose problem in B.C., the Chief Coroner concluded that the "so-called 'War on Drugs' ... can only be regarded as an expensive failure" (British Columbia, 1994: vi). Police, while traditionally reluctant to question the status quo, have also begun wondering whether criminalization is the most effective policy to deal with heroin. The Chief Coroner reports that police told him they are "wasting their time on this social issue" (British Columbia, 1994: vi). Similar conclusions have been reached by senior police administrators in the U.S. as well (International Antiprohibitionist League, 1994).

Today Vancouver is believed to be the largest supplier of illegal heroin in North America (O'Brien, 1994); and according to treatment professionals I spoke with, heroin is easier to obtain in Vancouver than marijuana (Garrison, 1995). While researching a story on the "war on drugs" for *The Georgia Straight*, writer Daniel Wood notes that he learned from heroin users that heroin could be obtained "faster than a Domino's pizza" in the city (Wood, 1995: 13). The first time I realized how easy it was to obtain heroin in the city was, ironically, on the way to a hear Ethan Nadelmann, a Princeton University professor, talk about the failure of the American War on Drugs. While walking down Hastings street on the way to the Harbour Centre campus of Simon Fraser University I was approached by an eager dealer and offered heroin. Other drugs seem just as easy to obtain: I also passed several young men whispering "up" and "down" -- street jargon for stimulants and

depressants.

Encouraging Polysubstance Abuse

Dangerous drug using styles, including mixing heroin with cocaine into a "speedball" combination, using heroin in combination with alcohol (or any number of other drugs) may also be more likely in the context of the war on drugs. Polysubstance abuse does not seem to have been as common prior to criminalization as it has become since. Previously, heroin users shunned alcohol and other drugs -- most seemed to have been aware of the hazards (Ruttenber et al., 1990). This is supported by anecdotal information I received from those who work with alcohol and illicit drug users in Vancouver (McGuire, 1995; Townsley, 1995). This consumption pattern, however, started changing in the late 1960's, when law enforcement measures designed to decrease the supply of heroin began escalating (Ruttenber et al., 1990). In the 1950's writer and heroin user William Burroughs described it this way:

As I began using stuff everyday, or often several times a day, I stopped drinking ... When you use junk you don't drink. .. The liquor stays in the stomach, slowly building up nausea, discomfort, and dizziness and there is no kick. (Burroughs, 1953: 41).

It seem that when heroin is unavailable (or unaffordable) as a result of periodic enforcement successes, however, seriously addicted users seek out drugs that *are* available (Ruttenber et al., 1990). Alcohol, prescription drugs, over-the-counter drugs, or other illicit drugs, are used to gain the effects desired. Recall that 92% of the heroin overdose subjects had more than one drug in their blood at death; and that in total, 49 different drugs were detected in the

blood of these decedents. Because those who consume one drug excessively typically consume other drugs excessively (Nadelmann, 1992), it is likely that someone with a history of heroin abuse whose drug supply has temporarily dried up will simply switch to a drug that *is* available. Consequently, when the user's drug of choice becomes available a pattern of polysubstance abuse may emerge.

Based upon coroner's data reviewed in this study, it also seems that a significant number of illicit drug overdose subjects were former or current alcohol abusers. This conclusion was reached by the Chief Coroner in the *Report of the Task Force Into Illicit Narcotic Overdose Deaths* (British Columbia, 1994), and by researchers studying recent increases in illicit narcotic deaths in Germany (Shultz-Shaeffer, 1993). The irony is that chronic alcohol abusers would be considerably better off consuming *heroin* than alcohol, had the drug been available to them in pure form and in knowable doses. Previously the opiates were used to treat alcohol addiction, apparently with some success (Brecher, 1972). Long term habitual use of heroin, as indicated, does not cause any physiological damage. Heroin or morphine may also be preferable because, as a physician reported in an article entitled "Advantages of Substituting the Morphia Habit for the Incurably Alcoholic", published in 1889, it "is less inimical to healthy life than alcohol [because] it calms in place of exciting the baser passions, and hence is less productive of acts of violence and crime" (Cited by Brecher, 1972: 8). Alcohol, a known precipitator of violence (Fattah, 1991), is associated with about half of all homicides that occur annually in Canada (Boyd et al., 1991) and the U.S. (Nadelmann, 1989).

Drug toxicology data analyzed in this study suggest that alcohol abusers are *increasingly* turning to heroin, perhaps because availability has helped to drive the price down. A point of heroin (about one-tenth of a gram) can be obtained for 10 dollars in Vancouver, making it a relatively inexpensive habit. Heroin is also easily obtained in Vancouver at most of the hotels in the Downtown Eastside of the city (Garrison, 1995). In 1984 less than a quarter of the heroin overdose subjects tested positive for alcohol; however by 1993 more than *half* did. Postmortem blood alcohol concentrations in the decedents have also risen dramatically. In 1984 8% of the heroin overdose subjects had blood alcohol concentrations of .10% or greater; by 1993 more than *five times as many decedents* (43%) had alcohol concentrations this high. Moreover, while *none* had alcohol concentrations of .25% or higher between 1984 and 1987 between 4 and 9 percent of the decedents had alcohol concentrations this high or higher *after* 1988.

There are other inferences that can be made from the increased presence of alcohol in the heroin overdose deaths. Rutenber & Luke (1984: 17) argue that the rise in blood alcohol concentrations in heroin overdose subjects they studied in Washington D.C. were likely caused by "an increase in ethanol consumption by heroin users, or an increase in heroin consumption by ethanol abusers, or by a combination of these influences". The rise of alcohol detected in heroin overdoses subjects studied in Norway led Teige & Wethe (1993: 952) to speculate, similarly, that "a change in the misuse pattern" has likely occurred among heroin users as well.

These toxicology findings are also significant in term of explaining the etiology

of these overdoses. Blood alcohol levels equal to, or above, 10% have been found to be major contributing factors in several studies of illicit drug overdoses (Levine et al., 1995; Ruttenger & Luke, 1984; Ruttenger et al. 1990). In some cases coroners have determined that this level was probably responsible for death since drug levels decline after death¹⁹ (Garriott & Sturmer, 1973). One coroner explains that "levels of alcohol [found in the postmortem sample] when extrapolated to a period of time prior to death would have been in the acute poisoning range". Given that the typical heroin overdose subject had a blood alcohol concentration of .14%, it seems likely -- indeed probable -- that in a substantial number of these overdoses the heroin may not have been the primary cause of these deaths.

When I contacted a couple of treatment centres in Vancouver and mentioned that the role of alcohol in the heroin overdose had risen dramatically since 1984, staff were not surprised. I was told that the habit of co-injecting heroin and alcohol is inevitable in the Downtown East Side of Vancouver. This area contains about 80 percent of all the licensed drinking seats in the city, or about 7,000 licensed drinking seats (British Columbia, 1994: 46). Some hotels in the Downtown Eastside offer beer on "Welfare Wednesday" for as little as a dollar a glass (British Columbia, 1994: 40). Thus, perhaps it should not surprise us that deaths attributed to heroin in B.C. peak each month on the Thursday and Friday following Welfare Wednesday (British Columbia, 1994). Given the enormous dangers associated with combining alcohol with heroin,

¹⁹ It is also possible for drug levels to *increase* after death as a result of postmortem redistribution. Hearn et al. (1991b) compared blood levels of cocaine and benzoylecgonine (its metabolite) at autopsy with those obtained at the scene of the death, and found considerable differences. Where comparisons were made between the same sites, cocaine levels increased by as much as 116%, while levels of benzoylecgonine increased by as much as 125%.

these findings are of major concern.

Drug toxicology data also indicate that increasing numbers of heroin overdose subjects were consuming *cocaine* prior to their deaths. In 1984 about 8% of heroin overdose subjects tested positive for cocaine, while by 1993 42% did, an increase of more than 500 percent. In 1992 more than *half* of all heroin overdose subjects had cocaine in their blood at death. Availability may have encouraged heroin abusers to try cocaine. Anecdotal evidence reported by the Chief Coroner seems to support this conclusion. He reports evidence "frequently suggests that ... users may have been cocaine abusers who by accident or intent purchased heroin and subsequently succumbed to an inadvertent heroin or mixed drug overdose" (British Columbia, 1994: 2).

Most of the problems associated with cocaine -- like most drugs -- result from chronic and excessive exposure, when it has been combined with another drug, or when it is consumed intravenously (Chilnick, 1990; Erickson et al., 1994; Julien, 1992). The initial C.N.S. stimulation that cocaine causes can cause cardiac arrhythmias and seizures when consumed at high enough doses. This stimulation is followed by C.N.S. depression. As a result, when cocaine is involved with a C.N.S depressant (e.g. alcohol, heroin, valium, codeine) death may be related to the adverse effects this stimulation causes to the heart muscle, as well as the combined effects of the respiratory depression that follows, or both (Baselt et al., 1983; Escobedo et al., 1992; Finkle & McCloskey, 1977). While cocaine has been linked to liver and lung disease states, many users abuse tobacco and alcohol (Alexander, 1990; Hartman, 1988), making it extremely difficult to determine what role the

cocaine played in the genesis of these pathologies. Studies reporting cocaine causes brain hemorrhages are especially misleading: most have used subjects suffering from pre-existing neurological pathologies, which were also likely factors (Hartman, 1988). Users suffering from coronary artery disease, however, are at an elevated risk of suffering a fatal cocaine intoxication (Escobedo et al., 1992).

Determining the precise role cocaine played in these overdoses is also complicated by a routine procedure carried out by toxicologists: adding together cocaine and its metabolite benzoylecgonine when estimating the amount of cocaine in the body at death. While this is a routine procedure, it introduces a potential error into the toxicological analysis because benzoylecgonine remains in the blood for a longer period of time than cocaine. As a result, there is a chance that in some cases benzoylecgonine concentrations found in the blood at death represent an accumulated residual of many previous doses (Wong & Alexander, 1999: 111). Since benzoylecgonine is an inactive compound these residual concentrations would not have contributed to death.

Researchers in Europe (e.g. Penning et al., 1993; Puschel, 1993; Puschel et al., 1993; Shultz-Shzeffer et al., 1993; Teige & Wethe, 1993) and North America (e.g. Kringsholm, 1988; Levine et al., 1995; Rutenber & Luke, 1984; Rutenber et al., 1990; Zimney & Luke, 1981) report that the habit of combining legally available drugs with illegal drugs is among the most significant contributing factors in the etiology of the overdose death. Most also indicate that polyintoxications are increasing.

While we have been looking for the "magic bullet" to explain addictive behaviors, it seems the likely answer is more complex: there are things about individuals, about the environment in which they live, and about the substances involved that must be considered (Rodgers, 1994). Advocates of prohibition, however, typically suggest that heroin is inherently addictive,

is not a single, basic mechanism. observation". Peele suggests that the most likely truth about addiction is that it 'disease' view of addiction is refuted by both research and everyday (55), a leading expert in the field of addictions, "Every major tenet of the much at odds with the Disease Model of addiction. According to Peele (1996: 1990; Jaffe & Martin, 1985). While popular, the scientific evidence is very search for a genetic route to addiction has been inconclusive (Alexander, personality traits have been identified among heroin users however, and the disorder, an "addictive" personality). No clearly recognized pathological abuse because of some inherent weakness or personal deficit (i.e. personality According to this theory the individual is believed to be susceptible to drug criminal prohibition, and is also called the "Criminal Model of Addiction". factors (Alexander, 1990: 256). It is commonly referred to by advocates of predisposition, improper socialization, or a combination of both of these Disease Model of Drug Addiction, suggests that addiction results from genetic deviant, sick, or just plain bad. The most well-known explanation, the explanations to explain drug addiction; most suggest abusers are either Social concern about drug abuse has helped to generate several

particularly for those believed to be suffering from some sort of inherent weakness or genetic (predisposing) pathology. Several years ago the LeDain Commission (1973: 307) tried to debunk this myth, reporting that after extensive research on heroin it was determined that:

The once popular notion that morphine-like effects are intrinsically so pleasurable that most users who experience them are promptly addicted has not been scientifically documented.

The Adaptive Model of Addiction (Alexander, 1988; Alexander, 1990) seems to offer a more plausible explanation for drug addiction, accounting for the dynamic interaction of the role of the drug, the psychological state of the user, and the social circumstances of use. The model suggests that most people become seriously addicted to drugs (whether legal *or* illegal) because their pharmacological qualities are adaptive to a particular set of problematic individual and social circumstances, not because users have anything *inherently* “wrong” with them. One former user highlights this, explaining that: “With heroin, your life can be falling apart around you and everything’s still fine with you” (Sabbag, 1994:43). From this perspective most habitual heroin (or alcohol or cocaine or prescription drug or over-the-counter) users are neither necessarily “bad”, nor are they suffering from some kind of inherent psychological problem. Rather, the decision to use a drug habitually seems to distract from a crippling preoccupation with a sense of individual failure, and often a dire social situation (Alexander, 1990; Weis et al., 1992).

While it is often difficult to determine the precise individual and social circumstances of alcohol and illicit drug overdose subjects based solely upon coroner’s reports, it seems these individuals have a lot in common. Poverty,

depression, loneliness, and homelessness, are among the most significant factors associated with *both* alcohol and illicit drug overdoses. Most lived in the Downtown Eastside, an area suffering from urban decay, transience, and economic deprivation -- in short, a ghetto; several were "street people" -- and completely homeless. Unstable living conditions, and poverty, are very common findings among illicit drug overdose subjects. So is a sense of worthlessness. The Chief Coroner, in the *Report of the Task Force into Illicit Narcotic Overdose Deaths in British Columbia* explains that:

the common thread that appeared to be present in each addict was his or her sense of worthlessness. Not one had any self esteem. They indicated they had been told consistently that they were "low -life", for want of translation, nothing more than a piece of "feces", and that they would never amount to anything in life. Psychologically they were not only damaged and defeated; they were destroyed. They felt sub-human, bereft of conscience and reason (British Columbia, 1994: 2).

Based upon the findings of *Report of the Task Force into Illicit Narcotic Overdose Deaths in British Columbia*, the number of overdoses in B.C. peak each month on the day following "Welfare Wednesday". This is the day income assistance cheques from the Ministry of Social Services are distributed. This further highlights the inescapable: most overdose subjects are poor.

It seems fairly clear that there are a number of individual, social, and economic challenges facing many users, and that the compulsive use of heroin (or alcohol) provides relief from them, at least in the short term. One user highlights this, explaining that "[a]fter shooting up, I could live under the Hastings Street viaduct and actually believe I was living in a castle" (Cited by

British Columbia, 1994: 40). When a drug has been found to be “adaptive, functional, or ego-syntonic” to a user’s current individual and social circumstances, it is much more likely to lead to compulsive use (Chein et al., 1964: 227; Parker et al., 1988; Puschel et al., 1993). This suggests that under certain conditions virtually *anyone* can develop a drug addiction. Physician and drug researcher Andrew Weil (1994) explains it this way:

the essence of addiction is craving for an experience or object to make yourself feel all right. It’s the craving for something other than self, even if that’s within the realm of the mind. I also feel that addiction is something that’s fundamentally human; it affects everybody (Weil, 1994: 34).

Highlighting the drugs associated with these overdoses is one way of attempting to understand these deaths. It is also convenient. It offers an easy scapegoat for a constellation of individual and social problems for which no other single cause can be found. But it doesn’t really help us understand these deaths in any meaningful way, since the majority of alcohol and heroin users do *not* face the individual and social problems people overdosing on these drugs do (Mitchell, 1991; Trebach, 1993). Moderate heroin (and alcohol) use is typically associated with considerably less individual and social stress. Erickson (1995) reports for example that cocaine use by “well integrated individuals ... is usually well controlled and poses few problems”. This means that, as Weil (1983) notes, “*Any drug can be used successfully, no matter how bad its reputation, and any drug can be abused, no matter how accepted it is.* There are no good or bad drugs; there are only good and bad relationships with drugs” (Weil, 1983: 27, italics in original).

In Vietnam, for example, many soldiers became addicted to heroin; its' pain relieving qualities and ability to produce euphoria likely offered some relief to soldiers experiencing the stress, anxiety, and depression often associated with combat. It is significant to note, however, that after returning to the U.S. most Vietnam veterans gave up their heroin habits, even though drug availability was not a problem (Zinberg, 1984). It seems that after returning to friends and family, more supportive social circumstances, and a less stressful situation, the heroin was no longer required. These conclusions are also supported by animal research²⁰. Compulsive heroin use seems to arise in situations where users are suffering from both individual and social problems for which the drug provides some relief. Directing our attention at the psychological state of the use and the social circumstances of use, rather than simply the drug, seems to offer the most hope for understanding drug addictions. Chomsky (1991) suggests, however, that:

if ordinary people are free to reflect on the causes of human misery ... they may well draw all the wrong conclusions. Therefore they must be indoctrinated or diverted, a task that requires unremitting efforts. The means are many; and engendering fear of a threatening enemy has always been a powerful tool in the kit (Chomsky, 1991: 109).

Chomsky's insights can be easily applied to the heroin problem we face today: since the opiate drugs were criminalized we have been indoctrinated with the belief that heroin is the prototypical dangerous drug; it has become the "threatening enemy", preventing us from reflecting upon the actual causes of the medical problems associated with heroin abuse. Our indoctrination has

²⁰ Alexander (1990) reports that rats housed in small barren cages self-administered sixteen times more morphine than those housed with others of both sexes in a "roomy and comfortable" environment. These findings further emphasize the crucial role the psychological state of the user, and the social circumstances of consumption, play in compulsive drug use.

been fostered, in part, by sensationalist media depictions of heroin users. By highlighting the most socially and economically depressed people as heroin users, the media inadvertently promote several erroneous beliefs about the pharmacological qualities of heroin. Those with no experience with the drug are led to believe that heroin *causes* these problems. It does not; no drug is that powerful.

Despite the stereotypes and the mythology surrounding heroin, there are many examples in the literature of heroin users leading long, productive, and healthy lives in spite of their addiction. A study of 861 heroin addicts in Philadelphia -- some of whom had been addicted for as long as 20 years -- determined that "addiction is not characterized by physical deterioration or impairment of physical fitness". According to the physicians conducting the study, there was "no evidence of changes in the circulatory, hepatic, renal, or endocrine functions" (Cited by Brecher, 1972: 23). These heroin users were aware of the doses they were consuming, consumed them free from adulterants, and maintained a healthy diet. Heroin, consumed in these conditions, is a remarkably safe drug. After years of research, many recognized experts have come to this conclusion. Physician Raymond Houde, of the Sloan-Kettering Cancer Center, explains: "if heroin were not banned I would probably use it too" (Cited by Trebach, 1987: 295). Despite its illegality, recognized experts still consider heroin to be "the standard against which new analgesics are measured" (Jaffe & Martin, 1980: 495).

Criminalization Diverts Attention From the Full Range of Causes of Problems.

The most visible heroin users suffer from a tremendous amount of social and medical pathology. Based upon the findings of this study, however, few of these problems can be fairly attributed to heroin use *per se*. While autopsy data indicates existing disease states were diagnosed in 80% of the illicit drug overdose subjects, it seems these medical pathologies were caused by everything *but* heroin. They were caused by: (1) a poor diet and/or a sedentary lifestyle; (2) contact with a person infected with a virus; (3) other drug taking behavior; or (4) conditions created by the "war on drugs". Unfortunately a policy of criminalization, by suggesting that the drug is the problem, has helped divert attention from the the actual causes of these medical pathologies.

It is significant to note that virtually *all* of the disease states associated with the illicit drug overdose subjects -- none of which were caused by *any* of the illicit drugs -- can elevate the chances a fatal drug intoxication will occur. These disease states also help to explain why most alcohol overdose subjects (87%) *and* heroin overdose subjects (70%) had postmortem drug concentrations that were either: (1) below the minimum established lethal level, or (2) were similar to concentrations detected in subjects dying from causes *other* than an overdose. It seems that, as Starkenstein (1979) argues, "no substance, whatever its quality or quantity, can be called a total poison, for its toxic action will always depend on the conditions under which it acts upon the organism" (cited in Filov, 1979: 15). The conditions under which

heroin is being consumed in B.C. are explored in the following section.

A Poor Diet or a Sedentary Lifestyle

One in five illicit drug overdose subjects (20%) suffer from disease states caused by a *poor diet or a sedentary lifestyle* (i.e. atherosclerosis, high blood pressure, coronary artery disease). All of these medical conditions can elevate the chances a user will suffer an overdose. Stanski et al., (1978) determined that subjects suffering from cardiovascular disease states (i.e. "peripheral vascular disease" and "abdominal aorta aneurysms") metabolized drugs considerably slower²¹ than non-diseased subjects. The slower the rate of metabolization the longer the drug remains pharmacologically active in the system, and, consequently, the greater the opportunity for a toxic reaction to occur. Cardiovascular pathologies can also increase the odds a toxic or fatal reaction will occur by straining respiratory activity (Berkowitz et al. 1975; Jaffe & Martin, 1985). In one overdose situation the coroner makes this clear, reporting that "the enlargement of the heart associated with [the decedent's] raised blood pressure would have contributed to ... death by putting an added strain on the heart".

The War on Drugs or Criminalization

Disease states caused by the "*war on drugs*" or *criminalization* (e.g. "Junkie Lung"), diagnosed in 40% of the illicit drug overdose subjects, can also

²¹ Stanski et al. (1978) report that subjects suffering from cardiovascular disease states had an average morphine half-life of 4.5 hours, while non - diseased subjects had an average half-life of 2.95 hours.

increase the odds that an overdose will occur by burdening respiratory functioning. In some cases lung pathologies are so extensive that they can cause death even in a body free from drugs. In a study of overdose victims in France, Ingold (1986: 88) reports that in many overdose situations "it is likely that ... acute intoxication is not the sole or principle cause of death ... since the impaired general condition and lesions (for example, those affecting the liver and lungs) play such an important role that they alone may be the cause of death".

Contact With A Person Infected With A Communicable Virus

Disease states arising from contact with a person *infected with a communicable virus* (e.g. H.I.V., Hepatitis B), detected in 30% of the illicit drug overdose subjects, can play a major role in increasing the chances a fatal drug intoxication will occur. This is because these conditions tend to weaken the body's immune system, placing the user at risk for acquiring a host of medical problems that may interfere with circulation, respiration, or digestion. Since in many cases these disease states are acquired when needles are shared with an infected person, they could also be attributed to the war on drugs; advocates of criminalization have traditionally been against dispensing needles to heroin users. The fear has been that dispensing needles will encourage intravenous drug use; however, "there is no evidence in the literature, or from experience in the field, that the introduction of needle exchange programs has led to an increase in drug use" (British Columbia, 1994: 18). On the contrary, evidence from the field suggests that contact with needle exchange programs is often the first step a user will make towards

getting treatment (Mattinson & Hawthorne, 1996).

Other Drug-Taking Behavior

Disease states caused by *chronic alcohol abuse* (e.g. cirrhosis, pancreatitis, hemorrhagic gastritis, alcoholic hepatitis), diagnosed in almost a third (27%) of all illicit drug overdose subjects, can also profoundly alter the toxicity of a drug, and increase the odds that an overdose will occur (Clark, 1988). This is because these conditions tend to reduce the rate at which enzymes in the body convert drugs into their less dangerous metabolites. A healthy liver plays a pivotal role in sheltering users from the most deleterious effects of drugs (Lieber, 1983). Moreover, extensive liver damage may cause death even in a body free from drugs. The Canadian Centre For Substance Abuse (1994) reports that cirrhosis (and other conditions caused by long term alcohol abuse) accounted for 2,155 deaths in Canada in 1990. This type of organ damage was diagnosed in about one-fifth of the illicit drug overdose subjects.

Given that chronic tobacco abuse is often found among alcohol and illicit drug abusers, it is somewhat surprising that conditions that result from this consumption pattern (e.g. lung disease, emphysema) were detected in only 5% of the illicit drug overdose subjects. Nonetheless, these conditions can contribute to an overdose death in much the same way “junkie lung” can, by burdening respiration.

Medical complications associated with illicit drug overdoses, coupled with polysubstance abuse, and the fact most decedents had drug levels *lower*

then those found in subjects dying from causes other than an overdose, suggests that the drugs involved in these deaths were probably not sufficient alone to cause many of these deaths. Since several other factors are also involved in these deaths, some have argued that applying the label "overdose" to deaths involving heroin is actually a convenience more than anything else (Brecher, 1972: 106). Similar conclusions have been reached by researchers studying other kinds of drug death, including those attributed to methadone and cocaine.

In a study of overdose deaths attributed to methadone, Alexander et al. (1988) determined that almost *half* of the decedents had postmortem methadone concentrations below the established lethal level. They report that their analysis of the coroners reports, coupled with inquiries made with those who knew the decedents, helped them determine that the actual cause of death in most cases was not methadone, but the "prolonged general deterioration" -- physically and mentally -- of the users (Alexander et al., 1988: 161). It seems for many the methadone was the "final pharmacological insult that pushed some of these deteriorated people over the brink" (Alexander et al., 1988: 161). The methadone overdose subjects studied by Alexander et al., (1988) -- like the illicit drug overdose subjects analyzed in this study -- typically had an extensive history of alcohol abuse that contributed to their deaths.

Similar conclusions were reached by Wong & Alexander (1991) in a study of overdose deaths attributed to cocaine. They determined that "most of the [overdose] deaths involved long-time intravenous users or alcoholics ... whose deaths may [be] more productively ... attributed to accumulated ill health, to

the conditions that instigated their deviance, or to the current drug laws (Wong & Alexander, 1991: 115). In his study of 99 drug overdoses in Paris, Ingold (1986: 86) determined, similarly, that it "was though a lethal threshold had been crossed, with [the overdose] death coming as an end to a whole process of unfavourable development".

Where Do We Go From Here?

All policies create beneficiaries and victims, as well as intended and unintended consequences. Our drug policy in Canada with respect to heroin - criminalization -- is supposed to benefit drug users, by reducing availability, and deterring use. The intended victims are supposed to be the traffickers, who are supposed to be deterred from distributing the drug through the threat of the criminal sanction. We seem to have accomplished the reverse: drug users suffer from the fallout of a drug market regulated by criminal syndicates and the consequences of being labeled criminal, while the intended victims benefit from the illegal status conferred upon heroin, and reap the consequences in terms of enormous profits generated by the demand for these drugs. Thus, regardless of intentions, laws aimed at criminalizing heroin use do not eliminate (or, it seems reduce) the drug market -- they simply alter the shape of its operation (Kleiman, 1992:105) in ways that may dramatically increased its potential to cause harm to users, including increasing the risk of overdose. The same occurred during Prohibition, when attempts were made to curtail many of the problems associated with alcohol by prohibiting it. Prohibition was a failure; so is the "war on drugs".

If the goal is to prevent heroin overdoses and improve the overall health of drug users an armistice will have to be called, and the whole idea of a war on drugs abandoned; it is a very poor metaphor for social policy (Kleiman, 1992). This war divides us into allies and enemies (something characteristic of all wars) and prevents us from thinking rationally about drugs, drug users, and the social circumstances of drug use. On public health grounds, *any* drug can be dangerous, but these dangers, as the findings of this study show, are more a function of the individual and social circumstances of use, than the pharmacological qualities of the drug. Moreover, a policy of criminalization, rather than reduce the problems associated with drug abuse, have made them worse. Architects of social policy concerned about the social problems associated with drug abuse would do well to consider these issues. Without such consideration, the goal of reducing the number of people suffering negative consequences (including overdoses) as a result of their drug use -- whether it involves legal or illegal drugs -- will remain as lifeless as the bodies lying on the pathologist's table.

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GLOSSARY.

Alcoholic Hepatitis - liver damage caused by chronic alcohol abuse.

Atherosclerosis - A disease state characterized by a variable combination of changes to the arteries, including the excess accumulation of lipids, complex carbohydrates, blood and blood products, fibrous tissue, and calcium deposits. Risk factors for atherosclerosis include: hypertension, obesity, cigarette smoking, inability to cope with stress, physical inactivity, and a diet high in fat.

Autopsy - Systematic examination of the major organs of the body to determine the cause of death; also referred to as the postmortem examination.

Bilateral Centrilobular Emphysema - A disease state characterized by disturbances in the tissues caused by gas or air in the interstices, or spaces between organs.

Cardiomegaly - An increase in the size of the heart.

Cholesterosis of the Gall bladder - Excessive accumulation of cholesterol in the gallbladder.

Chronic Obstructive Lung Disease - A disease condition which decreases the ability of the lungs to perform their function; also called chronic obstructive pulmonary disease. Typically associated with chronic tobacco use.

Cirrhosis - A chronic disease of the liver characterized by degenerative changes in the tissues and cells of the organ, and fatty accumulation. Typically associated with chronic alcohol abuse. Also called alcoholic liver disease.

Coronary Artery Disease - A narrowing of the coronary arteries sufficient enough to prevent adequate blood flow to the heart. This narrowing is usually the result of atherosclerosis.

Foreign Doubly Refractile Material - What remains in the body from the adulterants that illicit drugs are combined with. May be found in virtually every organ including: the liver, spleen, and lungs.

Half -Life - The time it takes a drug to be reduced to half its original concentration. This measure is commonly used by toxicologists to compare the toxicity of different substances.

Hemorrhagic Gastritis - A hemorrhage of the stomach. Believed to be caused

by chronic alcohol abuse. Dietary insufficiencies may exacerbate.

Hepatitis B - Generalized inflammation of the liver caused by a viral agent. Typically acquired by i.v. drug users when needles are shared.

Hepatocellular Steatosis - Degeneration of the cells of the liver.

High Blood Pressure - A diagnostic judgment which must be considered in tandem with a person's age, body build, and previous blood pressure.

H.I.V. - Short for Human Immunodeficiency Virus. The virus is associated with, and believed to cause, Acquired Immunodeficiency Syndrome (A.I.D.S.). Intravenous drug users are at a high risk for acquiring the disease when hypodermic needles are shared with an infected person, as well as when the immune system is weakened.

Kidney Stones - Calculus or a crystalline mass present in the pelvis of the kidney, varying in size from small granular masses to an inch in diameter.

Nephrosclerosis - A disease condition affecting the kidneys characterized by a degeneration of the cells and tissues.

Pancreatitis - Inflammation of the pancreas.

Sigmoid Diverticulosis - Early stage of diverticulitis, an inflammation of the intestinal tract.