

THE ADULTERATION OF DRUGS: WHAT DEALERS DO TO ILLICIT DRUGS, AND WHAT THEY THINK IS DONE TO THEM

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The notion that street drugs have been adulterated/diluted by all sorts of dangerous substances such as Vim, Ajax, ground-glass, brick-dust and even rat-poison is a common one. Moreover, it is in fact a practice believed to be true by those involved with the researching of drug issues, the treatment and rehabilitation of drug users, the policing of drug users and the educating of drug users (*cf.* Coomber 1996) as well as by the users themselves. As this paper will show it is also thought to happen and be perpetrated by those who are deemed to be responsible for such adulteration/dilution, the dealers themselves. This however does not accord with the forensic evidence, or, as are the concerns of this paper with the practice or experience of individual drug dealers. This paper suggests, on the evidence of interviews with drug dealers at different levels of the drug distribution chain that less adulteration/dilution actually occurs than previously thought and that when it does happen 'on the street' it is of a relatively benign character.

Keywords: Adulterants; diluents; impurities; contaminants; dangerous adulterants; purity; drug dealers

INTRODUCTION

I have argued elsewhere (Coomber, 1996) drawing on the existing forensic and other evidence that in the UK there is sufficient reason to doubt that any where near as much adulteration¹ as is commonly thought to occur actually does takes place, and that where it does happen it is not with essentially dangerous substances. Adulterants and diluents such as paracetamol, caffeine and various sugars are common in drugs like heroin, not Vim,² chalk, and ground glass from light bulbs. Many of the substances that are found in fact actually 'enhance' the use of the drug involved, either through enabling a greater proportion of the drug to be used when e.g. prepared for smoking, or through adding a co-psychoactive effect of its own which in combination with the primary drug provides a cocktail which to some is preferable than the primary drug alone. Substances such as strychnine and quinine are found but again as enhancers to the drug. Strychnine for example has been found, like paracetamol, caffeine and other adulterants to enable greater retention of the heroin when volatized (Huizer, 1987) and at the dosages found represents no risk to health. It was the

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primary intention of this research to bolster the findings of the forensic evidence stated above by looking at what adulteration/dilution takes place at what point in the chain of distribution and through what methods by interviewing those responsible for adulteration/dilution and drug distribution/selling. This was considered important for while the forensic evidence is *indicative* much analysis merely confirms the presence or absence of a particular primary drug e.g. heroin and sometimes its purity. It does not determine either how often adulteration/dilution actually takes place or, in the vast majority of cases with which substances.

METHODS

Making contact—accessing those who supply drugs in order to interview them in relation to their practices of adulteration and selling was not a straight forward exercise. It is more difficult than the accessing of users (to be researched as *users*). Primarily this is because snowball research techniques and exposure as a user are not particularly threatening whereas to be contacted as a supplier of illegal drugs is potentially more problematic. The supply of drugs is by law a very serious offence whereas being merely a user is often far less problematic, especially if in treatment. The perception of individual vulnerability of someone sought out as a drug supplier is far greater than being sought out as a user—even though the two often combine. In all, 31 drug dealers/sellers,³ primarily from South East London, were contacted and interviewed (28) or given a questionnaire post (3). Contact was made in a variety of ways. Initially, personal contacts who sold drugs who knew and trusted me as a researcher (number: 3) were accessed. Secondly, I was fortunate to be carrying out some unrelated research which gave me access to ex-heroin users who had also sold drugs to varying levels and these were included in the study and were happy to provide information, at interview, on their *past* adulteration/dilution practices (number: 13). There is no reason to believe that their information was in any sense less salient than my other contacts. My third means to access dealers was to enquire to personal, non-dealing contacts who knew me as a researcher and could thus vouch for my trustworthiness, if they could put me in touch with any dealers they knew. This proved to be relatively unsuccessful (number: 3) and awkward. Often, the individual concerned either sold my contact drugs or sold common acquaintances drugs. They were therefore potentially reticent about telling them how much they effectively cheated on their sales through short counts or adulteration. I designed a second questionnaire which could be filled in by the dealer alone and then posted back to myself with an attached post-paid and self-addressed envelope. Finally, my fourth method of accessing dealers was to interview individuals convicted or charged with supplying drugs whilst detained at Her Majesty's pleasure in a South East London Prison (number: 13). This latter method enabled access to those with a broad spectrum of involvement in drug distribution and thus provided me with a good spread of individuals involved with drug selling.

The sample is a variegated mix of those involved at different levels of drug distribution. Their involvement in the drug scene differs significantly between respondents and over time. Their involvement in selling may be seen to be akin to the processural paths outlined

by Moore (1992; 1993) in relation to drug use/addiction and general involvement, whereby circumstances over time influence their involvement in selling and the level at which it took place. They are clearly not a literally representative sample (whatever this may look like) but none-the-less, given the background forensic evidence, do not appear to be unrepresentative towards their practices of adulteration/dilution.

FINDINGS

Belief in Dangerous Adulteration

Perhaps the most interesting finding was that the vast majority of the dealers 27 (90%) believed that dangerous adulterants/diluents are used but that they had no personal knowledge of this having been done. None of those interviewed (as we might expect) admitted to adulterating/diluting their drugs with the infamous (dangerous) substances outlined earlier but more importantly only 3 of them sought to legitimate their belief that it took place by saying that they had first hand knowledge of anyone who had actually done it. This second line of enquiry would have been the ideal opportunity for an individual guilty of the practice who had said that it does occur and who did not want to admit to it personally to project it onto a mythical 'other'. Of the 3 who claimed to have first hand knowledge of the practice, at least two, if not all three, are open to serious doubt to their authenticity.

Of the 3 who stated that they did have first hand knowledge of dangerous adulteration/dilution the difficulty was separating out those who had seen it done or had been told by the perpetrator (or a common acquaintance who had witnessed it) that it had been done from those who just believed it so much that they therefore 'knew' that it took place (e.g. from unsubstantiated rumour about a particular local dealer 'Jimmy's so desperate he'd put rat poison in it'). In practice, in the opinion of the author, this did not prove too problematic. Certain inconsistencies in responses often suggested the 'I know it happens' as opposed to the 'I have first hand proof and therefore I *know* it happens'. One prison inmate for example (cocaine and heroin addict/dealer) who initially and with great confidence stated that he believed brick-dust, talcum powder, Ajax, Vim, strychnine and other dangerous substances were adulterants/diluents in drugs sold on the street and in prison when pushed for details of his proof became far less coherent and then contradictory. New (weak) inmates to prison he assured me, 'still clucking' (withdrawing) would be given 'dust off the floor mixed with a little bit of heroin' by the unscrupulous prison dealers. When returned to the topic later on he said that this weak heroin was in fact probably cut with Anadin or paracetamol (neither of which are easily available). Finally, he acknowledged that the adulteration/dilution of the drug was probably all done 'outside' by the suppliers to those selling inside (and would thus be unlikely to be any different to that found outside). Another respondent reported that they had known someone who had boasted that they had used brick-dust in place of heroin but on closer examination were unsure as to whether this person had in fact been lying or not 'because he was an idiot'. The third respondent who stated that 'Ajax was substituted for smack [heroin]' (and had no knowledge of anything else) was quite clear that this had taken place as a narrowly targeted 'revenge' hit on one individual. As argued in Coomber (1996) such practices should not

be confused with a normal understanding of adulteration/dilution nor to contribute to a normal evaluation of the dangers based therein.

Prison, whilst being perhaps the most likely scenario for strange and/or dangerous adulteration/dilution due to the supposed lack of access to reasonable materials to use and a supposed enhanced level of desperation, may in fact, logically, be no more likely to result in the use of dangerous adulterants/diluents than outside. Access to sugar for example, which is soluble—unlike much floor or brick-dust, is relatively unproblematic. It is the suspicion of the author that beliefs which are prevalent outside of prison may become amplified in the structural conditions which pertain within prison and thus add to the conviction of the belief of those inside that dirty practices are afoot.

According to these findings it appears that the adulteration/dilution of illicit drugs with substances such as Vim, Ajax, brick-dust, ground light bulbs and other heinous substances, is, as also indicated by the forensic science literature, not a common practice (if indeed it is practised at all) of those who supply drugs, even by those euphemistically known as 'street dealers'. We can also say that despite such practices not being a part of the direct experience of those involved in the research such practices are widely believed to occur and to be a common occurrence. The particular form/s this tended to take are explored below.

Mixing Knowledge and Beliefs with Myth?

A few of the dealers interviewed, although clearly knowledgeable about *their* involvement in drug supply and adulteration/dilution, appeared to perpetuate particularly detailed ideas on adulteration which had greater levels of inconsistency and apparent willingness to refer to common mythologies than their other responses when it came to more speculative knowledge. One cocaine dealer (who saw himself as a cocaine dealer although he also supplied amphetamine, LSD, and ecstasy) for example, had much to say about the adulteration/dilution of cocaine (mainly with the sugar mannitol at the higher level) but also with glucose, caffeine, or any white crushable Over The Counter (OTC) drug. However, when it came to heroin and heroin dealers these were considered types that you do not mix with. He had an image of heroin as a 'dirty' drug (whereas cocaine was a 'clean' non-problematic drug) and of heroin users/dealers as desperate and dirty. In fact it was this desperation which meant that these individuals were the ones who used Vim and Ajax—because of the desperate state they had been reduced to. Ironically, he readily dismissed the idea of dangerous adulterants in cocaine as unlikely due to the discerning nature of the user, 'word of mouth' being very effective in highlighting a dealer who was selling poor quality drugs, and, that such rumours were in reality unreliable, often started by rival 'firms' seeking to undermine competition. He furthermore subscribed to the unsubstantiated myth of heroin dealers enticing school kids by mixing speed with heroin to get them hooked, another clear sign that some of his beliefs about adulteration/dilution and heroin were based on the type of prejudice and relative ignorance found in and perpetuated by the tabloid press (cf Lindesmith 1941, Kaplan, 1987, Coomber, 1995a,b). The theme of desperation in fact was a common link to each of those who believed dangerous adulteration to take place. A second cocaine and amphetamine supplier who was also on occasion an importer whilst claiming not to have ever adulterated/diluted these drugs himself, again did believe it happened but only by the 'desperate'. These desperados he believed

used talc and amphetamine in cocaine, and, brick-dust in heroin. Yet another 'importer' (mainly of cannabis, but occasionally of cocaine and amphetamine) whilst showing enough knowledge to suggest that he knew what he should, when asked to elaborate on the likely adulteration/dilution of amphetamine down through the chain of distribution he suggested that it would always be 'stepped on' (adulterated/diluted) at each level. This is inconsistent with findings from forensic analysis on amphetamine sulphate which tends to show that a very large single 'cut' is made at the stage of importation and that purity then differs little regardless of the weight seized⁴—differing weight i.e. Kilos, half-kilos, ounces etc normally indicates differing levels of distribution (Coomber, 1996).

A Desire to Know and Be Seen to Know?

A number of respondents did make replies which at times seemed quite at odds with the majority of the responses. Accepting these responses at face value however would have been problematic. The feeling of the author is that some of the respondents, particularly those being interviewed, saw themselves as having the job of enlightening the poor ignorant researcher on all aspects of the drug scene. This led to them on occasion to 'inform' me about aspects of adulteration/dilution at different parts of the distribution system which were outside their normal experience. Often this information contradicted some of the forensic evidence (whereas their information on what they did, did not) and sometimes it contradicted what I was also learning from other dealers located at a different point in the system. The importer mentioned in the previous section is one such example as is the cocaine dealer who confidently related his knowledge about heroin junkies/dealers.

What this perhaps demonstrates, along with the great variability in practices and in beliefs of the practices of 'others' is that drug selling in the UK is fragmented both in terms of organisation (Lewis *et al.*, 1995) and in terms of knowledge. Combined, these two situations permit a greater level of mythology to permeate even the ranks of drug sellers, about each other, than might be the case in other situations.

LESS ADULTERATION?

Heroin

Out of the 17 who supplied/dealt in heroin 11 (65%) said that they *never* adulterated/diluted it at all (although 2 who also sold other drugs did adulterate/dilute those), and 1 said they did it very rarely claiming to have adulterated/diluted only 6 times in 10 years. Only 1 heroin dealer, who was dealing 4 to 5 ounces a month, said that he always cut the heroin (glucose) and that this would be by around 10–20% depending on the initial strength. This can be usefully compared however to a dealer of 15 years who described himself as at the 'bottom' of the drug distribution hierarchy. He reported selling a roughly comparable 1 kilogramme monthly but had never adulterated/diluted.

The 4 who 'sometimes' adulterated/diluted the heroin (usually depending on their subjective perception of the strength of the sample—determined through 'tasting—it' or trying it out) tended to be dealing larger quantities of heroin⁵ than those who 'never' adulterated/diluted it although this was not always the case. The variability in how much

adulteration took place however demonstrates the lack of structure to drug distribution in the UK. One respondent, dealing on average 20–30 ounces of heroin each month stated that it [adulteration/dilution] ‘varied depending on how good the gear is. No point making it weak no—one wants it’, whereas a 5 ounce a month dealer who believed ‘All my drugs [received] were pure’ stated that a standard 25% adulteration/dilution was generally applied to heroin, cocaine and amphetamine before selling on.

All of those that sold heroin responded that the substance they used to make dilute the sample was a sugar, usually glucose or lactose. If the fact that the ‘smaller’ heroin dealers (potentially the most desperate?) in this sample were less likely to adulterate/dilute at all is in any way generalisable then the idea of the *desperate* street heroin dealer being the most likely to adulterate/dilute with harmful substances (if and when it happens) is undermined.

Amphetamine Sulphate

As stated previously it seems likely that amphetamine sulphate tends to be adulterated/diluted at time of importation (or production, for domestic samples). As explained above apart from a purity of say 65% at importation (1993 figures, HM Customs & Excise, 1995) the purity found after that, regardless of weight tends to be similar, an average of 5–6% since 1990 (NCIS, 1994). In the sample, of the 15 that sold amphetamine only 4 (27%) said that they adulterated/diluted it. The ranges of dilution were stated as follows: 40%, 25%, ‘5 grammes to the ounce’ (about 17%), and ‘depended on strength’.

If we hypothesise the initial large adulteration/dilution down to 5 or 6% as in recent years, we also need to acknowledge that this average will be made up of quite a lot of variability. In 1991 for example the average over the year was 6% but the ‘typical range⁶’ in that year was between 1 and 9% (HOSB, 1995). A sample that has been already diluted by around 95% can actually suffer a reasonably large further cut, in the region of those stated by the dealers above, without affecting the level of purity significantly. For example a 25% dilution of a sample only 7% pure will have the effect of reducing the purity to 5.6% and even a dilution of 40% would only reduce it to 5%, keeping the sample in both cases close to the average.

Those that did dilute their samples claimed to use either glucose (2); Paracetamol (1); or, Bicarbonate of Soda (1).

Cocaine

Out of the 11 who sold cocaine 5 said that they did not adulterate/dilute it at all. One of these claimed to be an occasional cocaine importer from the US (but dealt/imported more seriously in cannabis) who always dealt in kilos. One was a long term user who mainly sold to friends and relied solely on the profit from ounces bagged into grammes. One had sold rarely but was a long time amphetamine seller and manufacturer. The other two were ‘street dealers’ who did not adulterate/dilute any of the drugs they sold.

Of the 6 that did claim to dilute the cocaine they sold, 1 said he diluted it by ‘5 grammes to the ounce’ (about 17%); a second between 10 and 20% ‘max’; a third and fourth by 25%; a fifth, depending on the purity stated that ‘imported at 80–85% passed on to whole-

salers pure then on to dealers where 4 grammes would be added as a matter of course, then up to say 7, 8 or 9 grammes depending on purity . . . if the cut is too high the batch is wasted'.; the sixth who only bought 'rocks' (crack cocaine) which he believed ensured it was pure (i.e. 80–90%) diluted by 10–20%.

The substances stated as diluents were glucose (4); paracetamol (1); amphetamine (1).

Alternative Means to Make 'Profits' on a Sale

As speculated in Coomber (1996) one of the reasons that less adulteration/dilution is likely to take place is because the so-called 'street' dealer ('street' meaning that this individual sells on primarily to users, sometimes on the street but more commonly in their own home, or at pubs/clubs/other locations) has other means through which to procure a profit from the drugs they have acquired to sell on. The first means, the 'bagging' or 'wrapping' of the initial bought weight e.g. 2 ounces of cocaine into 60, single gramme 'bags' or 'wraps' (there are approximately 28–30 grammes to an ounce) and charging a slightly higher price for a gramme or half-gramme of cocaine than is equal to one thirtieth of an ounce (in the last quarter of 1993 the average wrap size for heroin was 200mg (a fifth of a gramme), for cocaine 375mg, for amphetamine 600mg, and for crack 200mg). In other words selling small amounts at an price which is more than there initially divided worth. All street dealers that intend to gain from the enterprise of selling drugs increase the aggregate worth of their supply in this way as a matter of course. Profit is therefore inherent in the sale of drugs down the chain of supply.

The second means to realising a profit for the street dealer other than through adulteration/dilution is through 'short counts' or by skimming a small amount off of the individual sample. It is evident from the respondents that some take more care over this than others. One long term drug dealer (10 years) who earned all of his income from selling drugs since leaving school was clear that he received most of his profit from the mark-up on small sales not from 'stepping on it' (dilution—although he would *sometimes* do this to amphetamine). Moreover he suggested he was lazy when it came to wrapping it up and often did not bother with short counts and when he did the amount of skimming was arbitrary and negligible—except with ecstasy where he would skim a few tablets off the top of a 'parcel' of 200–300 for personal use. Otherwise, an ounce of whatever drug was being divided up would be split into the approximate weights by eye e.g. 56 roughly equal bags for half gramme deals and then wrapped. Selling short on weight was not commonly mentioned by the respondents. The impression gained overall was that profit was *primarily* gleaned from selling in smaller weights at proportionately higher prices, and secondly by dilution which is another way of producing an effective short count but providing the expected weight.

Why They Said They Didn't Do It

The dealers were asked to comment on why they would not, given that none had admitted to such a practice, adulterate/dilute with substances such as Vim, Ajax, brick-dust etc. The responses tended to fall into two essential categories: first, the humanitarian, that it 'wouldn't be ethical . . . seems ridiculous', 'because you would have

to be crazy', 'because it is dangerous', 'I don't want to kill anybody' type of response (17), and second, the rational calculative, 'the comeback', 'would be sussed', 'bad for business' type of response (6). Some combined both forms of response (5). One response combined the humanitarian with the ruthlessness of doing business to those he did not fear reprisal from 'I sold 16 year olds aspirin and they believed it was 'E'. It didn't hurt me or them. I'd never use worming tablets—that's evil'. Three were also concerned to stress that they believed they had a good name on the street for quality drugs and suggested they took great pride in preserving this status. These responses tend to support the rationale outlined in Coomber (1996) whereby it is suggested that logically it is unlikely that dealers would knowingly put dangerous substances in the drugs they supply unless they were psychotic and that it would be bad business to poison your customers as you soon would not have any and/or they might reap revenge.

DISCUSSION

As stated earlier the belief that street drugs are adulterated/diluted with dangerous substances particularly by 'street dealers' is prevalent. That it is also prevalent amongst those who actually sell the drugs is significant but apparently not as an indicator from a more informed source. The research indicates that drug suppliers and street dealers do not adulterate/dilute as a matter of course, that when they do they use relatively benign substances such as glucose. Also, despite having no first hand knowledge of dangerous adulteration/dilution, predominately they *believe* it to take place as common practice. It may be speculated that the predominate and general perspective on drug adulteration/dilution has been historically informed by popular imagery about the drugs scene in general and the 'type' of person who sells drugs. Lindesmith (1941) over fifty years ago wrote of the '*Dope Fiend*' Mythology' which had grown up in the United States around drug addicts and 'dope peddlers'. One of the longest running myths perhaps, which at once demonstrates the 'evil' of the drug dealer, and thus at the same time rationalises the possibility of other evil acts (like adulteration with poisonous substances) is the idea that soft drugs are adulterated with more addictive ones like heroin, or that free samples are given away to entice the vulnerable, hook them and thus secure new custom. In 1996, as in 1941, there is no evidence that dealers use so-called hard drugs in soft ones or that they stand on street corners or in ice-cream vans enticing the young and vulnerable, fagin like, to try their free wares. Moreover there is good reason for why they would not (*cf* Coomber, 1995b). Other situations also produce a need for explanation which makes speculation about poisonous adulteration possible. Occasional sudden deaths of experienced as well as inexperienced addicts may lead users to suspect poisonous adulterants. But such cases are nearly always the result of either high purity, use of too high a dose after tolerance has been reduced, poly-drug use complications, and perhaps changed situational circumstances.⁷ None-the-less, a user population needs, in the absence of other evidence, to rationalise how and why an experienced drug user would suddenly die from a drug overdose. Rumour is a powerful mythologising device in any circumstances and in the drugs world, where people are forced to operate clandestinely and deal with people they

neither trust nor would normally mix with, they are perhaps even more pervasive. Gossop (1996: 184) for example refers to those heroin addicts who accept much of the mythology attached to heroin addiction and that 'The myth of the dope fiend is just as firmly entrenched in the junkie sub-culture as it is in straight society'. As is revealed by a number of the respondents in this research some non-heroin drug dealers/users (and indeed some of those who do deal/use heroin) have similar prejudices (dirty, desperate, degenerate) against (other) heroin addicts/dealers as the non-drug using/selling population. Such prejudice, in both the using/dealing population as well as in the 'drugs field' helps to recreate a perspective on drug adulteration which ultimately helps to buttress perspectives on 'evil drug dealers' which must be seen to impact on public policy towards those who supply drugs.

References

- Bucknall, A. B. V. and Robertson, J. R. (1986) Deaths of Heroin Users in a General Practice Population. *Journal of the Royal College of General Practitioners*, **36**, 120–122.
- Coomber, R. (1996) Vim in the Veins—Fantasy or Fact: The Adulteration of Illicit Drugs. *Addiction Research*.
- Coomber, R. (1995a) Drugs and the Media. In Coomber, R. (ed.) *Drugs Your Questions Answered*, ISDD, London.
- Coomber, R. (1995b) Drug Myths. In Coomber, R. (ed.) *Drugs Your Questions Answered*, ISDD, London.
- Gossop, M. (1996) *Living With Drugs*, Ashgate, Aldershot.
- HM Customs & Excise (1995) Personal communication relating information on purity of seizures since 1986.
- Home Office Statistical Bulletin (1995) *Statistics of Drug Seizures and Offenders Dealt with, United Kingdom*, 1994, Issue 24/95, December 1.
- Huizer, H. (1987) Analytical Studies on Illicit Heroin: Efficacy of Volatilization During Heroin Smoking. *Pharmaceutisch Weekblad Scientific Edition*, **9**, 203–211.
- ISDD (1994) What's in a Drug? Druglink Factsheet 10, in *Druglink* Nov/Dec.
- Kaplan, J. (1983) *The Hardest Drug: Heroin and Public Policy*, University of Chicago Press, Chicago.
- Lewis, R. Hartnoll, R. Bryer, S. Daviaud, E. and Mitcheson, M. (1995) Scoring Smack: The Illicit Heroin Market in London, 1980–1983. In South, N. (ed.) *Drugs, Crime and Criminal Justice—Volume 1: Histories and Use, Theories and Debates*, Dartmouth, Aldershot.
- Lindsmith, A. R. (1941) Dope Fiend Mythology. *Journal of Criminal Law and Criminology*, **32**, 199–208.
- Moore, D. (1992) Deconstructing "dependence": an ethnographic critique of an influential concept. *Contemporary Drug Problems*, Fall, 459–490.
- Moore, D. (1993) Beyond Zinberg's 'social setting': a processual view of illicit drug use. *Drug and Alcohol Review*, **12**, 413–421.
- National Criminal Intelligence Service (1994) *Drug Valuation Guide*. Strategic Research Unit, June.

Notes

1. The term adulterant is used in this paper to refer to substances added to illicit drugs in the process of selling and distribution. Adulterants proper, are in fact other psychoactive drugs (like caffeine, or paracetamol) which are much cheaper than the main substance, have a similar or complimentary effect when mixed with it, and therefore help hide the fact that the substance has been diluted. Substances which are not psychoactive, such as glucose and lactose, are more formally known as 'dilutents'. These are added to a drug to increase the amount of drug available to be sold. It should be noted however that some substances which are found in street drugs will be the result of the particular manufacturing process used to make the drug. In this sense those substances might be more properly referred to as 'impurities'. 'Excipients' found in drugs (primarily pills/tablets) are the products used to bind the drug together. Common excipients are starch, gelatin or other gums (ISDD, 1994).
2. Vim and Ajax are the trade names of domestic cleaning agents. Traditionally, as today, they appeared in the form of a white scouring powder (although there are now a number of liquid scourers which are generic to the originals to be found under the same trade name).

3. The terms dealer and supplier will be used in the text to designate an individual involved in the selling and supply of illicit drugs. A supplier will normally denote someone who supplies drugs to others (e.g. importers, wholesalers) who will then sell them on to other distributors. A dealer will normally denote an individual who sells to users. In practice these two often overlap.
4. As we shall see *some* 'street dealers' do dilute amphetamine further, but this is after the initial large cut. If the amphetamine was being progressively diluted as it passed down the system percentage purity would vary much more e.g. 60% to 40% to 20% etc. This does not tend to be found by seizures regardless of weight seized.
5. Those who may have been dealing in a relatively small weight of heroin in any one month were often dealing larger weights of other drugs.
6. The 'typical range' is found by excluding the 10% of seizures with the highest purity values and the 10% with the lowest purity values.
7. Sudden deaths of heroin addicts have been speculated to occur when there is change in the context or environment where the drugs have been taken (Bucknall and Robertson, 1986). It is thought that this relates to the psychological aspect of tolerance whereby tolerance to effects is partly inclusive of set and setting as well as drug. In this way an experienced addict who uses heroin in unfamiliar circumstances may be relatively less tolerant because familiar cues are missing resulting in overdose from a 'normal' dose. The notion of literal high purity or poisonous adulteration is often unsupported by the fact that other users also participated in the use of the same drug at the same time and that forensic analysis sometimes shows the drug to have no unusual characteristics, even high purity. The combined use of other drugs, particularly alcohol, is also often hypothesised to be a contributing if not causal factor.