

# Essential Features for Valid Science

By the late Dr. David Cook

In assessing evidence about the effects of substances which addicted persons use, it is necessary to separate fiction from fact. Fiction arises not only from the person addicted to substances but also from those whose opposition to substances clouds their ability to distinguish fact from fiction. It helps to consider the following:

1. **Does the originator have a vested interest?** It is difficult to give full credence to someone whose livelihood or lifestyle depends on the opinion presented. The bias may not be conscious and may be based on limited experience. Views held by addicted persons, drug dealers, those who hold a strong religious or social bias against drugs, or those in law enforcement agencies may not provide unbiased information. Distinguish between the intelligence of the **POSITION** and the evidence used to support it.
2. **Is the evidence in the form of an anecdote?** Some anecdotes represent common occurrences but other isolated incidents which may not reflect usual situations. You should distinguish between the **TRUTH** of an anecdote and its applicability to all other situations.
3. **Do the conclusions make sense?** Sometimes a position becomes so far-fetched that it is hard to believe.
4. **Is the old “post hoc ergo propter hoc” fallacy alive and well in the argument?** An illustration might be “two weeks after my wedding, my father broke his leg. People should not get married – it causes their parents to have broken legs!” Each event may be true, but they may **NOT** be causally related.
5. **Is the SOURCE of the information listed?** If you wanted to could you write to the person who originated the information?
6. **Is the information published and, if so, is it in a reputable journal?** Note that even well-established newspapers are **NOT** reliable sources of information unless they quote an accepted and reputable source. Mistrust phrases like “Scientists have proved that...”
7. **Do you have all the information?** Drug effects are limited by **DOSE, DOSE INTERVAL, DURATION OF USE, ROUTE OF ADMINISTRATION, and SPECIES**. It has been said that if you cannot get a drug to cause cancer in rats at some dose, for some time, and by some route – you are not trying hard enough!

8. **Do experimental conditions parallel street use?** Problems occur when a drug is used illegally, which may not be duplicated in lab experiments. Synthetic THC is probably lacking serious and immediate adverse effects, but **SOLD** as synthetic THC may prove to be phencyclidine, which is very hazardous.
  
9. **Have the criteria for a clinical trial been met?** It is unreasonable for ethical reasons to expect trials of the effects of illicit drugs to parallel exactly those trials necessary for a new therapeutic drug to be produced. Equally the criteria of controls, objective evaluation, randomization, use of statistics, clear objectives, and reasonable conclusions are all desirable and may be essential.