

Responses to questions posed by the Marijuana Per Se working group/August 2011**Dr. Jan Ramaekers-**

1. Can you correlate an active THC ng/ml number to the equivalent of 0.05 BAC? What number would you correlate to 0.08 BAC? Please use whole blood numbers or acknowledge if you are using plasma numbers.

Yes, THC levels of 2ng/ml in whole blood would correspond to 0.05 BAC. THC levels of 5 ng/ml would probably be close to 0.08 BAC. But remember that blood samples are usually taken 1-3 hrs after a crash/stop. This means that THC levels used in court will always be an underestimation of the actual levels during a crash/stop.

- Do you believe there should be 2 distinct numbers for impairment and under the influence if not why?

Some countries (e.g. Germany) use 2 distinct thresholds for alcohol that allows for a distinct qualitative penalties depending on the amount of alcohol consumed (BAC >.05 administrative offence and >0.11 criminal offence). For THC that would make less sense, because 2 thresholds would not distinguish between amounts of THC consumed. A single "puff" from a cannabis cigarette can easily produce THC concentrations between 10-20 ng/ml.

2. You said chronic marijuana smokers in the Netherlands are not considered fit to drive. You also said impairment wears off and returns to baseline after 4 hours. What criteria would you use to determine someone is fit to drive? If someone smokes one marijuana cigarette per day, are they unfit to drive or would they need to be someone who smokes all day every day?

- What criteria were used by the Dutch government to determine if a person was fit to drive?

Fitness to drive a being usually determined by medical doctor or psychiatrist on the basis of an interview and medical examination. Our laws explicitly define chronic cannabis users as unfit to drive. Our laws do not define chronic use.

3. You said you believe someone could show up above 5ng/ml after the window of impairment of 4 hours. Can you give examples of what levels are possible or likely after 4 hours of use. Could someone show up over 5 ng/ml 24 hours after use? 12 hours after use? Please use whole blood numbers or acknowledge if you are using plasma.

- If people show up after the time frame mentioned above, (are these males or females?) do you consider these people still impaired or affected by the drug in their blood? Are they

safe to operate a motor vehicle? Why did the Dutch government determine your level was necessary in your country?

In heavy users, you may find residual THC within 12 hrs after smoking below 2-3 ng/ml in whole blood, and measurable but very low THC concentrations (<1 ng/ml) for 7 days after smoking. On average, heavy users do demonstrate (behavioral) tolerance to the acute effects of THC but impairment is still measurable in a substantive subset of these users. Moreover, psychomotor function of heavy users at baseline (not intoxicated but residual THC present) is worse as compared to that of occasional THC users.

4. Please confirm you said if you there was one level where you would agree everyone is impaired, you would suggest 30 ng/ml plasma/15 ng/ml whole blood, correct? Yes, correct

- Could you explain why you believe that Europe and the United States set per se levels so low if you believe everyone is impaired at 15 ng/mL whole blood?

In my opinion, per se laws should serve public safety in general not the individual driver. The overall risk of THC impairment/crash risk starts to increase at lower THC levels.

Dr. Lantz-
(per Sean M.)

Dr. Lantz (This is the head Toxicologist at Rocky Mtn Labs, the private testing agency that re-tests samples from CDPHE/Burbach's lab). I have sent him the following questions and want to share the answers with the group. I [Sean McAllister] put the expected answers in parens below but I will forward his answers to the group.

If we set a per se blood level for marijuana at 5 ng/ml or lower, what is the range of deviation the test results will give us from the actual levels. In other words, is it possible that people will test at a 5 ng/ml but really be at a 3 or 2 ng/ml. (There is a 30% deviation, meaning someone could test at a 5, but be at a 3).

What evidence do you have that subjects are showing active THC blood levels above 5 ng/ml after the window of impairment (generally agreed to be 2-6 hrs after use). (Dr. Lantz claims to have several test results showing as high of results as 20 ng/ml 24 hrs after use where the subject was monitored for no use).

- In Dr. Lantz' study (subjects monitored for use), were these people in an in-patient facility or a controlled study. Is the study peer reviewed and published. If so by whom?

Dr. Huestis- (Questions were posed but not answered)

1. What political influences are there on your work? In other words, do your answers to questions have to be cleared through political appointees?

- Your work is funded by the United States government? Is your research approved through an IRB board that is independent from the government?

2. Do you acknowledge that some chronic users could show up with active THC levels over 5 ng/ml after the window of impairment of 2-4 hours after use? Is the science clear on residual levels of THC in blood for chronic users?

• If a chronic users has THC in their blood over 5 ng/ml 4 hours later are they still affected by the drug?

3. Raemakers said people are impaired for 4 hours after use. You have said people are impaired for up to 7 days or more. What kinds of long term impairments are you discussing and do these relate to driving performance?

- Are people effected in (cognitive and psychomotor) function?

4. Raemakers said that a per se standard at 1-2.5 ng/ml will capture some people who are not impaired, but such a standard is justified by a preference for public safety over individual rights. Is that your position also?