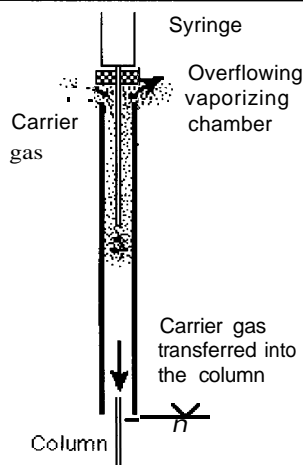




KONI'S KORNER

Figure 4 - 5cm syringe needles are too short for splitless injection as the chamber is overfilled even with small sample volumes & some 400 u1 of carrier gas must be transferred into the column before sample vapors get there.



evaporation in the gas phase of the injector (the most gentle vaporization process, since there are no contacts with packing materials adsorbing or degrading solutes). There is more vaporization inside long needles accentuating these advantages and disadvantages.

CONCLUSIONS

The 5 cm needle for vaporizing GC injectors is a typical compromise: it is between the desirable long and the desirable short needle, but is hardly ever desirable as such. The following table suggests optimum needle lengths.

Knowing how difficult it is to achieve complete sample transfer in splitless injection, this is certainly not the kind of problem we need.

SAMPLE EVAPORATION INSIDE THE NEEDLE

As if the subject were not of sufficient complexity yet - the length of the syringe needle also influences sample evaporation. Parts of the sample may be vaporized inside the needle during injection or when the needle content is eluted after the plunger is fully depressed. On the one hand, this often causes problems as more is injected than measured and preferential vaporization of volatile components discriminates against high boilers. On the other hand, it helps nebulizing the sample liquid at the needle exit, which is the prerequisite for sample

Optimum Needle Lengths

Injection Technique	Gas Supply System	
	Pressure reg./ needle valve	Flow reg./ back pres. reg.
Splitless	71 mm	71 mm
Split (flow rate >100 ml/min.)	25 mm	25 mm
Split (flow rate <100 ml/min.)	71 mm	25 mm
Split, high boiling matrix	25mm	25 mm

The length of the syringe needle is more critical than usually recognized. Try and see! Although this has been known for more than 15 years, only a few autosamplers give you the choice of varying the injection point. Presumably this is because too many customers ask more about the software for data handling than about the gas chromatograph when they buy a new instrument. Today much emphasis is given to quality assurance. Large amounts of time are invested into general QA procedures, the usefulness of which is not always obvious. Upon such efforts, easily more important optimization of technical aspects is neglected.



PERFORMERS

- Alleviates column end connection strain.
- Inlet and outlet ends conform to the column radius.
- Perform confirmational analysis with a single injection.

Universal Angled "Y" Press-Tight® Connector

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