Tab. 6.15: Overview of relevant parameters derived from the uranine breakthrough in the Vipava springs 5/5 and 4/7 in the fourth tracing test in autumn 1995 (injection into the pothole Slapenski ledenik, Oct 10, 1995): time(t_{max}), concentration (C) and velocity (v_{max}) of the first appearance, time of maximal concentration (t_{max}), maximal concentration (C_{max}) and dominant velocity (v_{dom}) in the springs and the recovery (R).

Spring	C [mg/m^3]	t_{max} [h]	v_{max} [m/h]	C_{max} [mg/m^3]	t_{dom} [h]	v_{dom} [m/h]	R [kg]	R [%]
Vipava-4/5	0,0015	406	19,7	0,1794	502	15,9	1,412*1)	28,2
Vipava-4/7	0,0011	405	19,7	0,1457	503	15,9	0,233*2)	4,66

+1) = recovery rate calculated for 4/1 and 4/5
+2) = recovery rate calculated for 4/6 and 4/7

6.3.4. The decomposition of tracers in the spring waters

(M. ZUPAN)

The decomposition of the uranine is different in different types of water (BEHRENS & ZUPAN 1976; ZUPAN 1991). To estimate this characteristic the analyses of limited number of samples taken in spring Hubelj and Vipava was repeated. The concentration of uranine in the samples taken in the spring Hubelj from October 22, 1993, till October 30, 1993, was determined for the first time from October, 28 till November 16, 1993. We repeated the uranine analysis in 89 of the mentioned samples in February 1994. The differences between the two determinations were in the interval of analytical repeatability and the concentrations of the second determination were practically the same as of the first one.

During the 4th tracing experiment (compare Chapter 6.3.3.2) we stored consecutive samples of the spring Vipava one in a glass flask and the second in a plastic flask. The samples in the glass flasks were analysed in maximal 10 days after sampling. Because of the lack of the time, the samples stored in the plastic flasks were analysed not before January, 25, 1995. The measured concentration of uranine in the consecutive samples was significant lower in the samples stored in plastic flasks then the concentration of the samples stored in the glass flasks. The difference between two consecutive samples decreased 15 to 100 % and in the next sample stored in the glass flask

increased again in the same percentage spread. Repeated analyses of 33 samples of the Vipava spring 4/2 taken from November, 13, 1995 till November, 21, 1995 was performed. The decrease of the uranine concentration of the samples stored in glass flasks ranges between 1 and 9 %, while the decrease in the uranine concentration of the samples stored in the plastic flask was 3 to 100 %.

Therefore in calculating of the tracer recovery for the 4th tracing experiment we considered only the concentrations measured in the samples stored in the glass flasks.

6.3.5. The Background Concentrations of the Used Fluorescent Dyes (M. ZUPAN)

Most of the spring water in the investigation area is used for water supply and therefore the number of appropriate tracers was very limited. Only the use of two fluorescent dyes, uranine and pyranine, was permitted. Additional the time intervals between the tracing tests were relatively short. Therefore we measured a great number of samples to estimate the background concentration in the springs. As background samples we took into account all intermediate samples between two consecutive tracing experiments. In Tab. 6.16 the number of measured samples and the concentrations were shown. Beside the dyes used in the tracing test we determined some signals at the characteristic wavelengths for other fluorescent dyes.

During the first tracing experiment emission peaks with maximal wavelength, significant for eosine appeared in the samples of the Hubelj spring. We evaluated these peaks according to the calibration curves of eosine. It would be possible that they belong to compounds of an unknown source. Eosine we determined in 88 samples taken from November 2, 1993, to February 18, 1994. The measured concentrations were 0.010 - 0.115 mg/m^3.