

Foliage from balsam fir, Mt. Mansfield, VT; collected 6/10 and 6/11, Mike Aucott, NJDEP, Trenton, NJ and Rutgers U., Dept. Env. Sci., New Goal was to replicate findings of Hartmut Frank and others of high level trichloroacetic acid in foliage of apparently stressed conifers. The trichloroacetic acid may be exerting some herbicidal effect.

Foliage collected from trees at 5 to 10 meter height, put in sealed glass refrigerated until analyzed 6/13

Then, analyzed for dichloroacetic acid (dcaa) and trichloroacetic acid in the manner of Frank, et al., Environ. Sci. and Pollut. Res., 1, 4-Frank, et al., J. High Resol. Chromatog., 18, 83-88, 1995.

Low levels of tcaa were found in the foliage of previous year's needles; correlation with altitude was noted. High findings of tcaa of Frank, were not replicated.

Raw data, notes., etc. appear below...

elevation feet	washed or un w'd	grams analyzed	micrograms/liter.....						
			vial #	dcaa blank	tcaa blank	analyte dcaa	val- tcaa	blank dcaa	va tcaa
3850	u	1.31	3	0.652	0.274	0.132	1.17	-0.5	0.9
3620	u	1.67	4	0.652	0.274	-0.080	1.02	-0.7	0.75
3050	u	1.53	5	0.652	0.274	0.824	1.59	0.17	1.31
3050	w	1.45	6	0.652	0.274	-0.176	1.16	-0.8	0.89
2590	u	1.66	7	0.652	0.274	0.218	1.12	-0.4	0.84
2050	w	1.8	9	0.652	0.274	-0.246	0.72	-0.8	0.44
2050	u	1.71	8	0.652	0.274	72.926	277.	72.2	277.

plain water blank tcaa reading was 0.448, external standard indicated so blank assumed to be 0.274

plain water dcaa blank was -0.125 and external standard indicated 1.43 so blank assumed to be 0.652

quantity in analyte was extracted into 9.0 ml water from grams of needles so ppb value is determined by multiplying (analyte-blank value) by 9/1000 dividing this quantity by grams analyzed, this will give ug/g, or ppm, so 1000 to get ppb

anomalous value is assumed to be inaccurate; possible explanation is this value was from unwashed sample collected morning of 6/11, after 1 and other sample were either washed (from the 2050 elev.) or collected before, under dry conditions, that this quantity represents quantity of tcaa (else eluting at same time) that was in the moisture clinging to the needles

4 samples of these needles, which had been placed in sealed container at -10 degrees F, were washed 6/29, and the wash analyzed the results showed very modest levels of tcaa and essentially ND for so whatever caused the anomolous high reading was either gone, or not associated with the needles in the first place. The latter se the more logical explanation.

data from foliage washings (15 ml. wash water):

foliage wt		tcaa blank		tcaa		tcaa in wash	
grams	vial #	(estimated)	val	per g	foliage	(calc'd as	ppb)
3.86	7	0.27	0.532	1.018			
6.7	8	0.27	0.512	0.541			
11.82	9	0.27	1.112	1.068			
13.31	10	0.27	0.504	0.263			

avg 0.723

so, looks like the amount of tcaa on the surface of needles w. can be by washing amounts to about 0.7 ppb (by wt) of the total;this is cons with the pair of samples from 3050 feet above, where the washed sampl about 1.2 ppb less tcaa than the unwashed sample

also of potential interest is the amount of water which fir foliage a hold. I took dry foliage samples, and spritzed water on with an atom the type used for windex. The average of three readings indicates th of needles can hold 0.6 grams of water.

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ass vials,

d (tcaa)  
14, 1994 and

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et al

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ppb, foliage

dcaa tcaa

-3.57 6.183

-3.94 4.068

1.008 7.752

-5.14 5.548

-2.35 4.597

-4.49 2.245

380.3 1459. this value almost certainly result of error.

0.1

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