Toxicity and Chemical Potential

analyses often differing by as much as two percent. The trouble was found to lie in the formation of tribrom-phenolbrom; Mr. S. J. Lloyd studied the rate at which this interfering chemical was produced,¹ and established conditions under which accurate determinations could be made. Lloyd's method of analysis² was used in all subsequent work.

The following are the results of the determinations with solutions of phenol in water, and with solutions containing 2 percent of salt as well as phenol. By "percent" is to be understood number of grams phenol (or salt) in 100 cc solution.

No Salt

Aqueous layer

0.21 0.45 0.76 0.97 1.13 1.34 1.42 1.70 1.88% phenol Toluene layer

0.34 0.88 1.69 2.22 2.65 3.24 3.80 4.93 5.73% phenol

2.0% Salt

Aqueous layer 0.20 0.44 0.58 0.79 1.00 1.25 1.49 2.00% phenol Toluene layer 0.38 0.98 1.37 1.98 2.75 3.75 5.38 9.02% phenol

These results are plotted in the accompanying figure, in which the abscissas of points on the two curves which have the same ordinate give the percentage of phenol in "chemically equivalent" solutions, one with no salt, the other containing 2.0 percent salt in addition to the phenol. Thus, solutions con- 12 taining 0.6, 0.7, 0.8 and 1.0 percent phenol without salt are chemically equivalent to, " i. e., have the same chemical potential of phenol as, solutions containing 2.0 percent



¹ Jour. Am. Chem. Soc., 27, 7 (1905).

2 Ibid., 27, 16 (1905).'