culated for $C_{12}H_{10}N_2O_6$, %: C 51.81; H 3.62; N 10.08. The acid hydrolysis of II formed the known 2-hydroxy-5-nitroacetophenone, mixed melting point 101–102° C.

With water cooling, a solution of 1.17 g (0.05 mole) of I in 20 ml of acetic acid and 12 ml of acetic anhydride was added slowly to a mixture of 1.33 g (0.055 mole) of $Cu(NO_3)_2 \cdot 3H_2O$, 3 ml of glacial acetic acid, and 2 ml of acetic anhydride (the temperature rose to 25° C). Then the mixture was stirred for 30 min and poured onto ice. This gave 0.5 g (36%) of substance III, mp 136.5–137° C (from ethanol). III is soluble in aqueous bicarbonate solution. Found, %: C 51.65, 51.90; H 3.78, 3.59; N 10.06, 10.09. Calculated for $C_{12}H_{10}N_2O_6$, %: C 51.81; H 3.62; N 10.08. On alkaline hydrolysis, the substance formed salicylic acid.

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SYNTHESIS AND DEFOLIATING ACTIVITY OF 2-BENZOTHIAZOLYL 5-CHLORO-2-PYRIDYL SULFIDE

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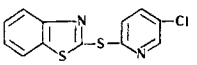
In order to obtain new defoliants from 2-mercaptobenzothiazole [1], we have synthesized 2-benzothiazolyl 5-chloro-2-pyridyl sulfide from 2-bromo-5-chloropyridine and 2-mercaptobenzothiazole in dioxane solution.



The 2-bromo-5-chloropyridine was obtained from 2-amino-5-chloropyridine [2].

The fall of the leaves of the cotton plant on the 12-th day when 3 kg/ha was used was 85–90%.

EXPERIMENTAL

A solution of 9.6 g (0.05 mole) of 2-bromo-5-chloropyridine and 8.4 g (0.05 mole) of 2-mercaptobenzothiazole in 40 ml of dioxane was kept at the boiling point for 3 hr and was then cooled and washed with 10% sodium hydroxide solution to eliminate the unchanged 2-mercaptobenzothiazole. The oil was separated off and the alkaline residue was extracted with ether. The ethereal extracts and the oil were dried over magnesium sulfate. The ether was evaporated off and the residue was distilled in vacuum to give 11.8 g (85%) of 2-benzothiazolyl 5-chloro-2-pyridyl sulfide with bp 240–242° C (3 mm); mp 100–101° C (from methanol). Found, %: S 23.10; N 9.84; Cl 12.65. Calculated for $C_{12}H_7S_2N_2Cl$, %: S 22.96; N 10.05; Cl 12.74.

The sulfone, obtained by Case's method [3] had mp 209–210° C (from benzene). Found, %: S 20.29. Calculated for $C_{12}H_7O_2N_2S_2Cl$, %: S 20.59.

The presence of an SO_2 group was confirmed by absorption bands in the IR spectra in the 1110–1130 and 1325–1340 cm^{-1} regions.

Hydrochloride, mp 93° C (from absolute ethanol). Found, %: S 20.19. Calculated for $C_{12}H_7S_2N_2Cl \cdot HCl$, %: S 20.31.

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