of the peroxy acid. In the case of peroxychloroacetic acid both processes take place at a much greater rate than with peroxyacetic acid.

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## 2,3-Dihydro-4*H*-1,3-benzothiazinones-4

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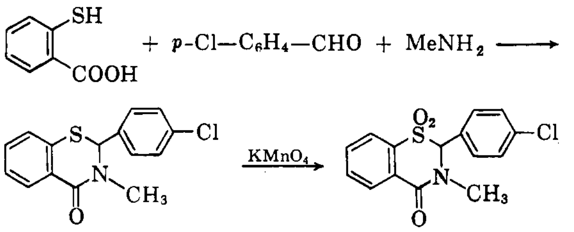
The only references to the synthesis of 4*H*-1,3-benzo thiazinones utilize the reaction of thiosalicylamide with aldehydes[1] or benzal chloride.[2]



We have found that 2-phenyl-3-alkyl-dihydrobenzothiazinones are readily prepared from thiosalicyclic acid, an aldehyde, and a primary amine in refluxing benzene. Oxidation by permanganate in acetic acid gives the sulfone.

When methylamine was replaced by 1,1-dimethylhydrazine or by aniline, the reaction failed.

### Experimental[3]

**2,3-Dihydro-3-methyl-2-(*p*-chlorophenyl)-4*H*-1,3-benzothiazinone-4.**—*p*-Chlorobenzaldehyde (10.0 g., 0.071 mole) was mixed with 30 ml. of anhydrous benzene previously saturated with methylamine. After 5 min. the solution turned milky. The solution was refluxed and water was removed azeotropically; the theoretical amount of water was obtained in 1 hr. The solution was cooled, powdered thiosalicyclic acid (0.071 mole) was added, and reflux was continued until another equivalent of water was removed (several hours). After cooling, the solution was rinsed with dilute base, dried, and the solvent was then removed. The residual viscous oil soon crystallized. The solid was triturated with hexane then recrystallized from benzene–isopropyl ether (11.0 g., m.p. 123.5–124°).

*Anal.* Calcd. for $C_{15}H_{12}ClNOS$: C, 62.17; H, 4.17. Found: C, 62.17; H, 4.08.

**2,3-Dihydro-3-methyl-2-(*p*-chlorophenyl)-4*H*-1,3-benzothiazin-4-one 1,1-dioxide.**—An aqueous solution containing 8.3 g. (0.053 mole) potassium permanganate was added portionwise, with stirring, to a solution of 9.0 g. (0.031 mole) of the thiazinone in 90 ml. of acetic acid. Slight cooling was required to keep the temperature below 35°. The brown mixture containing a tan suspended solid was stirred an additional half hour and a small amount of sodium hydrosulfite was then added to decolorize the solution. The tan solid product was filtered and recrystallized from alcohol–acetone giving 5.5 g. of white crystals (m.p. 169–170°).

*Anal.* Calcd. for $C_{15}H_{12}ClNO_3S$: C, 55.99; H, 3.76. Found: C, 55.69; H, 3.87.

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[1] H. Böhme and W. Schmidt, *Arch. Pharm.*, **286**, 330 (1953).

[2] R. Boudet, *Bull. soc. chim. France*, 1518 (1955).

[3] All melting points are corrected. Analyses were performed by D Rolston and her staff of these laboratories.