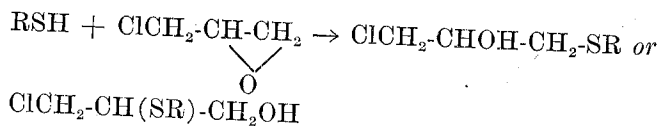


REACTION OF EPOXIDES WITH MERCAPTANS

EDWARD G. RIETZ
Wright Junior College, Chicago

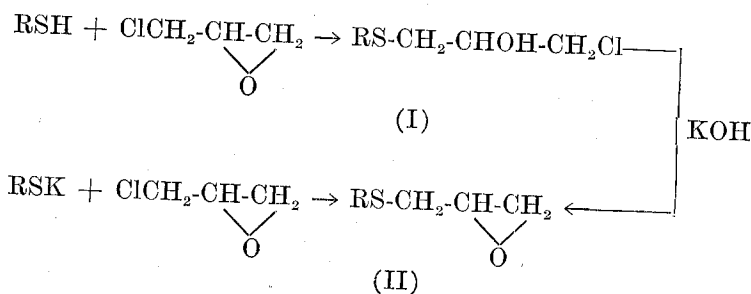
Epoxydes react with a variety of anions such as mercaptide, alkoxide, and phenoxide, and with a number of molecular species possessing unshared electron pairs such as mercaptans, alcohols, phenols, ammonia, and amines. In general, two modes of addition are possible in the reac-

tion of an unsymmetrical epoxide with any of these reactants, the reaction of epichlorohydrin, 1-chloro-2,3-epoxypropane, with a mercaptan, for example, conceivably yielding either a 1-alkylthio-3-chloro-2-propanol or a 2-alkylthio-3-chloro-1-propanol:



This reaction was first investigated by Nenitzescu and Scarlatescu (1), who concluded that the secondary alcohol is formed. Their conclusion was based upon the observa-

tion that dehydrohalogenation of the addition product yields the same product obtained directly from epichlorohydrin and a mercaptide, i.e.,



Gilman and Fullhart (2) observed that the above sequence does not necessarily preclude the primary alcohol structure. They then demonstrated conclusively that addition of a mercaptan to styrene oxide yields a secondary alcohol structure. However, the proof of addition to styrene

oxide is not necessarily valid when applied to epichlorohydrin. The secondary alcohol structure postulated by Nenitzescu and Scarlatescu was verified, however, by hydrolysis of the addition product and subsequent periodic acid oxidation of the resulting glycol (3).

