January 29, 1931

Mr. Thomas E. Midgley,

Worthington, Ohio.

Dear Midg:

I have waited a few days to give you the information about our last experiments on CClF:CClF because the animals last exposed were ill, and I wanted to see what the outcome would be.

On January 17 a guinea pig was exposed to approximately 15% concentration for fifty minutes. Very satisfactory anaesthesia was produced, the animal being in deep anaesthesia in about five minutes. He continued thus until the end of the exposure. Recovery took place in about five minutes, although after two hours the animal did not look entirely well. From this time on his condition became worse, and he died at the end of two days. Autopsy showed an acute edema of the lungs, a dilated heart, and edema and degeneration of the liver. On January 24 three other animals were exposed, one to 9% concentration, another to a 12% concentration, and the other to a 5.8% concentration. The first was exposed thirty-nine minutes, the second thirty minutes, and the last one hour. The 9% concentration produces a fairly satisfactory anaesthesia, but takes a little longer period than 12% obviously. It allows an excitation period of almost ten minutes. The 5-6% concentration does not produce anaesthesia at any time. The animal becomes somewhat dopey and occasionally breathes a little irregularly, but generally speaking is scarcely effected by this concentration for a period of an hour. The concentration capable of producing anaesthesia is, therefore, somewhere between 6 and 9%, which is close enough, I believe, for all practical purposes. The first two animals became ill after two to three hours following their exposure. One died on the next day and the other died the following day, with the same pathological findings as previously described. The animal exposed to 5.8% concentration for an hour became ill, and is still ill, but has not succumbed. In any case he has been very dangerously near the edge.

From these observations it seems reasonably clear that this material will not be satisfactory for anaesthetic purposes. Evidently some hydrolysis or some other chemical reaction produces in the tissues a toxic com-

pound which impairs the circulation and produces an edema of the lungs and the other tissues. The effect is very much like that obtained when ethylene dibromide or ethylene chlorbromide is used, except that the latter two compounds are very much more toxic initially. This is a bit disappointing, and unless there are still certain impurities in this compound to account for its toxicity, I am afraid it is out.

Best regards to yourself and family.

Sincerely,

RAK:EJ