

October 11, 1930

Dr. A. L. Henne,
Department of Chemistry,
Ohio State University,
Columbus, Ohio.

Dear Dr. Henne:

I called Midgley yesterday evening late to tell him the results of our observations on the last compound which you sent, namely, the CClF:CClF .

When this material arrived at the laboratory it was unpacked and immediately put into the ice box in the dark. It was absolutely water white on arrival, and continued so until we worked with it yesterday. However, when it was uncovered there was a fair amount of pressure within the bottle, and the gas which escaped had exactly the same odor as that which I described previously. The odor was somewhat acrid or acetic in character, and produced an astringent effect upon the nasal mucous membranes in such a way as to give one the sensation of inhaling dust. It is a distinctly unpleasant odor, though it is more of an irritation than an odor.

We exposed three animals. The first of these at a concentration of 42%. An effect was seen almost immediately, and in two minutes the animal was definitely sleepy and very shortly after rolled to one side in the cage and lay quietly from that time on. After eight minutes his breathing became jerky and difficult, and after nine minutes was very irregular. At ten minutes he ceased breathing, and though he was removed from the cage quickly we were unable to resuscitate him by artificial respiration.

At 20% concentration, much the same thing occurred, the animal ceasing to breathe after ten minutes of exposure. Quick removal served to save his life, since he gasped and began to breathe almost at once. Recovery was rapid, and in four minutes the animal was able to run away. The experiment was finished at 5:30. Unhappily for the satisfactory character of this material as an anaesthetic in its present form, the animal died this morning at about 9 o'clock. Necropsy showed an acute edema of the lungs, with a considerable irritation of the upper respiratory passages. This condition resembled very strikingly that seen when ethylene dichloride or dibromide is used. This delayed death is a serious matter. This did not occur before with the compound you sent me some weeks ago, and it seems to

me that it is possible that there might have been some impurity or oxidation product responsible for this delayed injury.

Another animal was exposed to 9% concentration for a full hour. The animal developed a very good state of anaesthesia in about ten minutes. From that time on he lay quietly. After fifteen minutes he developed a very rapid respiration, and from that time on no change took place to the end of the hour. On removal from the cage the animal began to recover, and by ten minutes was apparently entirely normal. This animal was found dead in the cage this morning with the same pathologic findings previously described.

This result puts a somewhat different light on the matter from that I felt when I talked to Midgley yesterday. I should say that it would be necessary to go slowly in the preparation of considerable quantities of this material until we can assure ourselves as to whether these delayed deaths are an intrinsic property of the material itself, or whether they are the result of impurities or instabilities on the part of the compound. These are matters which I shall have to leave to you.

With kindest regards.

Very truly yours,

RAK:EJ