

St. Louis, Missouri

June 7, 1956

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Mr. A. M. Ellenburg - H.O.
Mr. H. E. Matton - H.O.
Dr. J. E. Lum - Info.
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HYDRAUL 150

Mr. Sido and I had quite a discussion with the Navy people concerning the use of Hydraul 150.

Briefly, it is to be used in elevating the radio antenna although a good part of the Hydraul circulates in pipes outside the hull of the submarine. The pump, a certain amount of piping, and, of course, the reservoir, are inside the submarine proper.

The Navy had sent Treco's work on Aroclor 1242 to their toxicological consultants. By the way, we do know that this fluid contains 25 per cent Aroclor 1242 and that the other part is an alkyl aryl phosphate. Both Treco and the toxicological consultants say that 2 milligrams per cubic meter of Aroclor 1242 are safe. I agree with them on this. The industrial hygiene people of the Navy say that they think people will get higher levels than that in the submarine. I told them that in my opinion, this would not occur, and if they got any levels similar to that, there would have to be such an odor that people would not tolerate it any way. I also said that I thought that the working temperature of a submarine in even saturated air would contain much more than 2 milligrams per cubic meter of air.

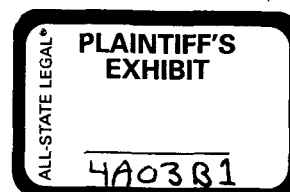
At any rate, what we need to do is the following:

- Pydraul*
- (1) Determine the amount of Aroclor present in air saturated with Aroclor at 72° F. and 80° F. We do not have this information, and I am sure the Navy will not want it by using formulas. They will want an actual experiment run.

Before I left St. Louis I asked Ellenburg to give me a real fast calculation of the amount in saturated air. He came up with the figure of approximately 3 milligrams per cubic meter. Roger Matton, by another calculation, came up with a figure of 1.1 milligrams per cubic meter. These were very rough calculations. However, in addition to checking these calculations, we need the actual test run.

- (2) What is the odor level in air at 80° and what is the offensive level?

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- (3) In addition, they wanted to find out how an ordinary CO₂ scrubber using 30 percent monoethanolamine in water would handle this Aroclor. In other words, a laboratory test could be set up to saturate the air at 80°, run it through the scrubber, and then to analyze the effluent air. I would imagine the Aroclor should be run just as 1242 and then use air saturated with Pydraul 150.

There is no question but that if we don't do this work, we haven't a chance of getting 150 used on any submarine. If the work turns out favorably, there might be a very good chance that it would be used not only on the radio antenna but also on all the hydraulic system on a submarine.

The Navy is also very anxious to get this done fast because all the submarines that are now being built are being designed to use synthetic hydraulic fluids other than oil.

I will be out of town until the middle of next week. Mr. Garrett and Mr. Wheeler of our office will be happy to consult with anyone who is going to get this work done. It looks to me like a job for Organic Research.

R. Emmet Kelly, M.D.

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