

SEP 10 1971

**Note to Files**

**TELEPHONE CALL FROM MATERIEL COMMAND, DEPARTMENT OF THE ARMY**

On September 9, 1971, I received a call from Darwin Taras, RSO, Headquarters, Army Materiel Command indicating they had further information on potential radiation exposure to the eye of Army personnel who use the night vision devices. These devices were the subject of a meeting with representatives of the Army Materiel Command on July 29, 1971 (see write up of meeting). Mr. Taras said that they had made some other measurements on the lenses, and new information on the thickness of the precorneal film covering the eye, and now their calculations show the following exposure rates may be possible.

A QF (quality factor) for alpha of 20 (based on 10 CFR 20 to lens of eye) as opposed to QF of 10 was used in the following although alpha would not penetrate to the lens of the eye.

<u>Distance in Centimeters</u>	<u>Alpha Exposure Dose</u>	<u>Beta-Gamma mrem/hr</u>
1	380 mrem/hr	
2	130 mrem/hr	0.78
3	25 mrem/hr	
4	12 mrem/hr	0.33
5	2 mrem/hr	

The use distance from the eye for the device is about 2 centimeters, therefore, the eye surface (cornea) could be exposed to 130 mrem from alpha. Their previous exposure measurements were judged to be 0.35 mrem/hr alpha with a total 0.43 mrem including beta and gamma.

He said medical texts they have consulted show that the fluid layer covering the eye is not 12 microns as they originally were led to believe but probably about 7 microns average. The later texts (see list) give this film as 5-7 microns. Army doctors feel that no more

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Note to Files

2

SEP 10 1971

than the epithelial layer of the eye could be exposed. This layer reproduces itself about every 2 days and no damage from use of the devices should be apparent but the use time would have to be limited. Mr. Taras says the Army can control these exposures but they feel other agencies who have the device should be made aware of the problem.

They are working up a notice on the night vision devices and will confer with AEC on the wording. They do not want to alarm people but feel it is time to warn agencies about the thorium lens in the eyepiece since they can contain 15-16% thorium. He feels a press release may be advisable.

Medical References

Wolf's Anatomy of The Eye and Orbit, R. J. Last (5th edition) W. B. Sanders Company, pp. 218-20.

(gave 5-12 microns thickness for fluid layer - 6th edition, p. 244 partly retracts this statement)

Contact Lens Practice, Robert B. Mandell, C. C. Thomas Company (p. 31 says total precorneal fluid is 5-12 microns)

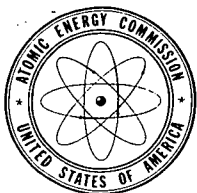
Investigative Ophthalmology, Volume 1969, p. 613, Dr. I. W. Ata (says 6-7 microns)

Original Signed w/  
Cecil R. Buchanan

Cecil R. Buchanan  
Materials Branch  
Division of Materials Licensing

bcc: St. Br. Dist.  
DML

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DATE ▶	9/10/71					



UNITED STATES  
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

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