

*We do not have a  
copy of this AFIT  
report.*

- AN (1) AD-A044 624  
EG (2) 060500, 060700  
CI (3) (U)  
CA (5) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO  
TI (6) Radiation Dose to Humans from 99m Tc Labeled  
Dihydrothioctic Acid (DHTA).  
TC (8) (U)  
DN (9) Doctoral thesis,  
AU (10) Vanek, Kenneth N.  
RD (11) 1976  
PG (12) 131p  
RS (14) AFIT-CI-77-14      255/      °PC °MF  
RC (20) Unclassified report  
DE (23) \*Radiation dosage, \*Radiobiology, \*Labeled substances,  
\*Radioactive isotopes, \*Diagnostic agents,  
Gallbladder, Liver, Toxicity, Liver function tests,  
Blood counts, Radiation absorption, Humans, Radiation  
measuring instruments, Scanning  
DC (24) (U)  
ID (25) \*Dihydrothioctic acid, DHTA(Dihydrothioctic Acid),  
Cholecystitis  
IC (26) (U)  
AB (27) Dihydrothioctic acid (DHTA) is a new 99mTc-labeled  
hepatobiliary imaging agent for liver/gall bladder  
visualization and for diagnosing acute cholecystitis.  
Nineteen patients with normal liver function were  
denied oral intake of food or drink after midnight  
and injected intravenously the following morning with  
4mCi 99mTc-DHTA, prepared from a commercial kit.  
Each patient was scanned in a supine position from  
the mid-thoracic to mid-thigh regions. Scans were  
performed at various times from 0.25 to 12 hours  
after DHTA administration; 3 to 10 scans being  
recorded for each patient. The patients were allowed  
to eat fatty meals at the normal noon and evening  
meal times thereby inducing the gall bladder to  
empty. A dual five-inch rectilinear scanner  
interfaced to a PDP-8/I computer with 16K of core  
memory was used for data collection. The biological  
distribution of 99mTc-DHTA is similar to that of  
(131)I-sodium rose bengal since it is rapidly cleared  
from the blood by the polygonal cells of the liver  
and enters the intestines via the biliary tract with  
the kidneys excreting a small quantity. This  
biological distribution complicates determination of  
the quantitative data in humans necessary for  
absorbed radiation dose estimates, as evidenced by  
the lack of published quantitative data for rose  
bengal. Cumulated activity values for complete  
elimination of 99mTc-DHTA were determined utilizing a  
computer program which performs graphic integration  
of the experimentally determined activity  
distribution curves.  
AC (28) (U)  
NL (33) 01  
CS (35) 012200