



A Tale of Two Legs



INTRODUCTION

- Collaborative study between:
- Canada - HML
- France - IRSN
- Germany - HMGU
- Spain - CIEMAT
- USA – PNNL, USTUR



HelmholtzZentrum münchen
German Research Center for Environmental Health





The PHANTOMS

Commercial
Activity synthetically
added

USTUR-102
Activity metabolized





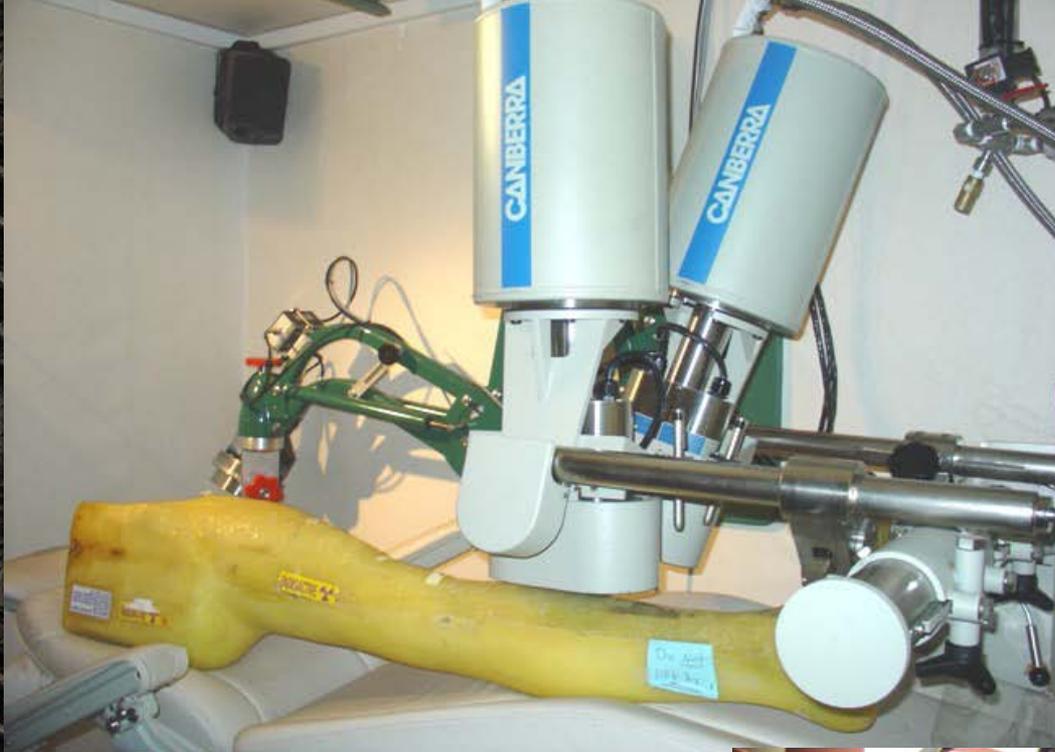
Activity Issue

France identified problems
in the stated activity of
the USTUR phantom

Published Value: 991 Bq

Corrected Value: 1191 Bq

Ref. Date: (1 Jan 2007)

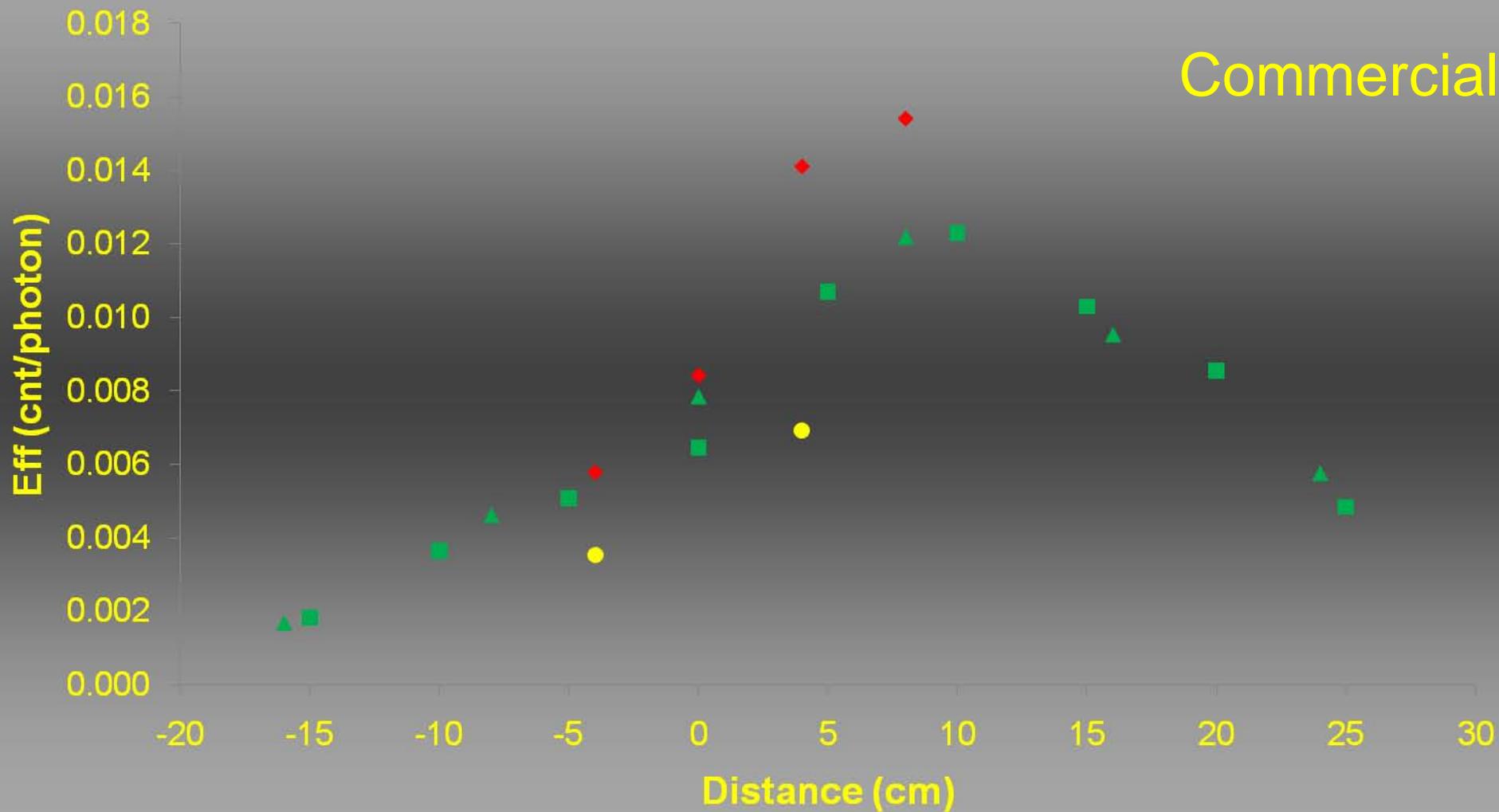




RESULTS¹



◆ HML ■ HMGU #1 ▲ HMGU #2 ● CIEMAT

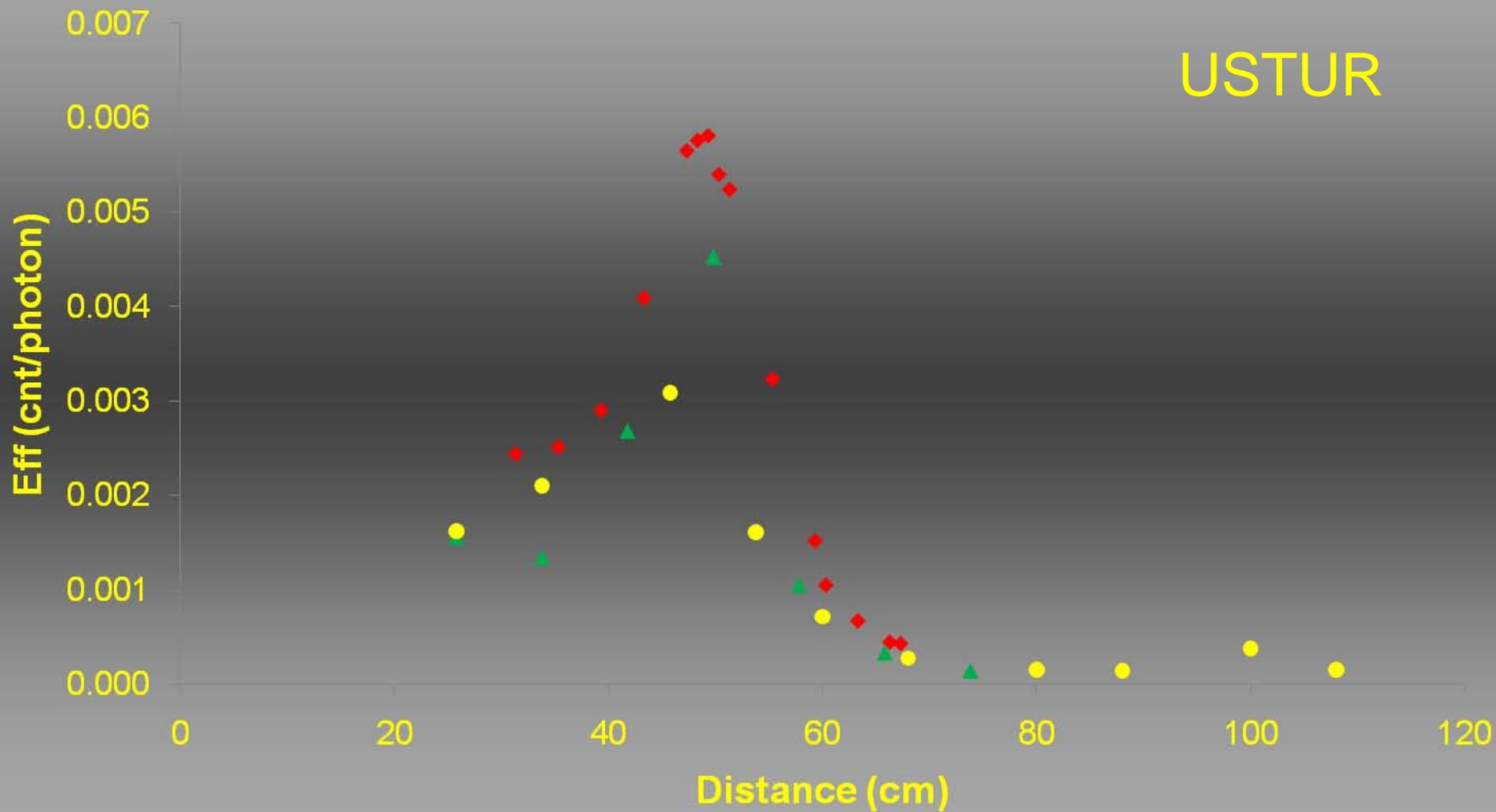




RESULTS2

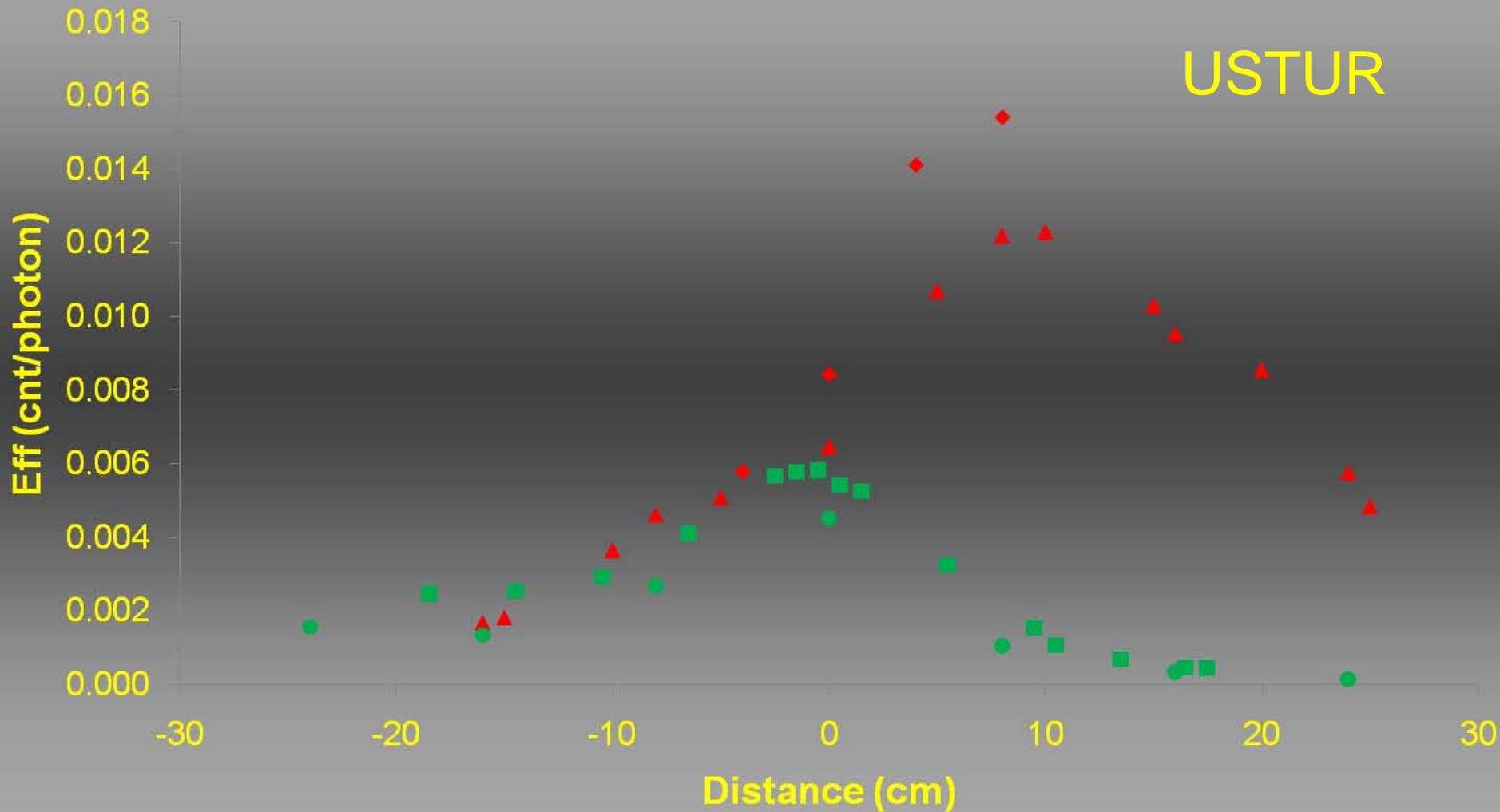


◆ HML ▲ HMGU ● CIEMAT



RESULTS

◆ HML (com) ■ HML (USTUR) ▲ HMGU (com) ● HMGU (USTUR)





CONCLUSION¹

- The two phantoms are not similar
 - The USTUR phantom is a result of metabolized ^{241}Am .
 - The commercial phantom had the activity added to the synthetic bone material.
 - There is a factor of 0.6 in an activity estimate depending which efficiency is used.
 - Using the maximum efficiency from the commercial phantom instead factor of 0.35.



CONCLUSION2

- These differences likely due to :
 - different distribution of ^{241}Am in the bone surface and/or volume
 - variations between bones,
 - different bone/patella anatomy.
- The artificial phantom inadequately simulates the outcome of a person's metabolic processes.

THE

END