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TITLE: DISTRIBUTION OF PLUTONIUM-239 AND AMERICIUM-241
IN THE HUMAN SKELETON

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DISTRIBUTION OF PLUTONIUM-239 AND AMERICIUM-241 IN THE HUMAN SKELETON

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The concentration of ^{239}Pu and ^{241}Am in each bone of two nuclear workers having 25 years exposure was determined. The defleshed bones of the right half of each skeleton were ashed and dissolved in acid. Each radioisotope was isolated, electrodeposited onto planchets, and counted by alpha-pulse-height spectrometry. The long bones of the arms and legs were separated into the shaft and the proximal and distal ends. Gross distributions in the cancellous and mineral bones were measured.

Percent Distribution in Major Bone Sites

<u>Bones</u>	<u>(Am)</u>	<u>(Pu)</u>
Head	14.1	14.3
Spine and Pelvis	17.8	28.7
Shoulder and Rib Cage	9.0	8.3
Arms and Hands	13.1	11.2
Legs and Feet	46.0	37.5

Excluding the respiratory system, 48% of the plutonium was in the liver and 44% in the skeleton: americium was distributed 6% in the liver and 84% in the skeleton.

The distribution of plutonium and americium in these two skeletons was similar. The teeth were found to have a relatively low, but consistent, concentration of americium and plutonium. The concentration of these nuclides in the bones was best expressed in terms of activity per gram ash. From these data, distribution coefficients can be obtained and used for the extrapolation of measurements from the smaller bone specimens obtained from routine autopsies to the whole skeleton.