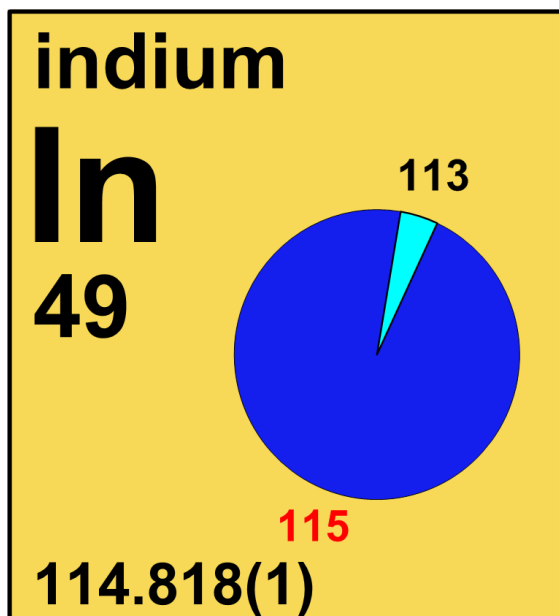


## 4.49 indium

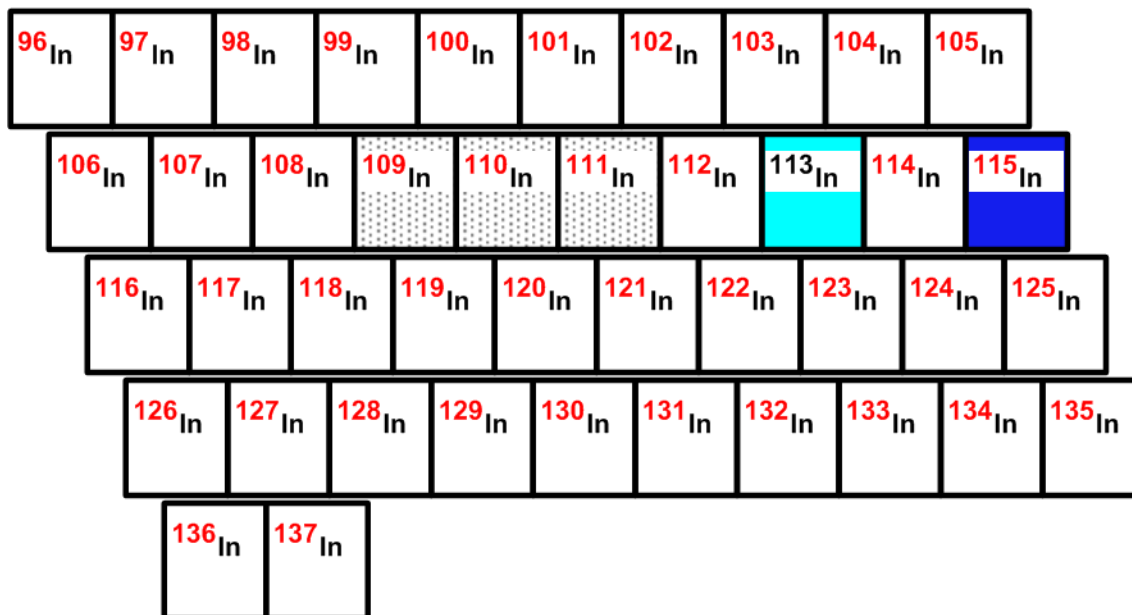


Stable isotope	Relative atomic mass	Mole fraction
$^{113}\text{In}$	112.904 062	0.042 81
$^{115}\text{In}^\dagger$	114.903 878 78	0.957 19

$^\dagger$  **Radioactive isotope** having a relatively long **half-life** ( $4.4 \times 10^{14}$  years) and a characteristic terrestrial **isotopic composition** that contributes significantly and reproducibly to the determination of the **standard atomic weight** of the element in normal materials.

## Half-life of radioactive isotope

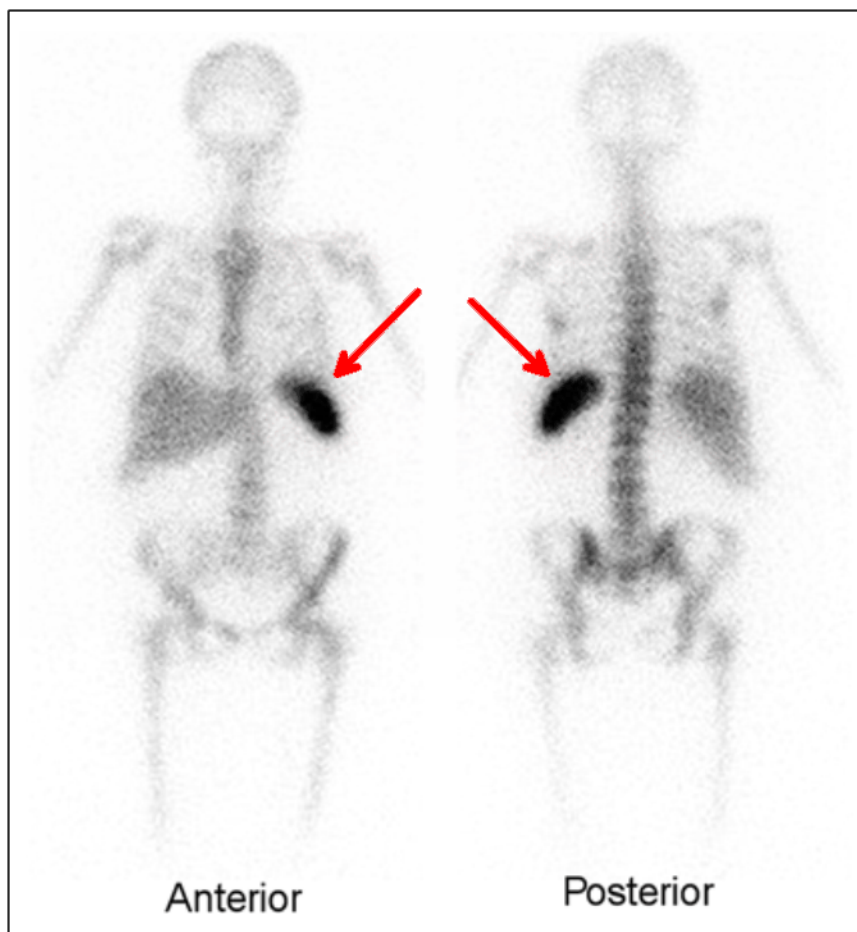
Less than 1 hour	
Between 1 hour and 1 year	
Greater than 1 year	



## 4.49.1 Indium isotopes in medicine

$^{111}\text{In}$  (with a half-life of 2.8 days) is used in indium leukocyte imaging (Figure 4.49.1), in which white blood cells that are abundant at sites of infection are labeled with  $^{111}\text{In}$  to help locate the source of the infection [358-360].

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**Fig. 4.49.1: Radionuclide** imaging of infection. Leukocytes are white blood cells in the body that protect the body from infection and can be dyed with  $^{111}\text{In}$  to locate the site of an infection in the body. (Image Source: Love, Charito MD and Palestro, Christopher J. MD., 2004) [360].

### 4.49.2 Indium isotopes used as a source of radioactive isotope(s)

$^{113}\text{In}$  is used to produce  $^{113}\text{Sn}$  (with a half-life of 115 days) via the reaction  $^{113}\text{In}(\text{p}, \text{n})^{113}\text{Sn}$ , and  $^{113}\text{In}$  is used to produce the **radioisotope**  $^{110}\text{In}$  (with a half-life of 1.15 hours) [361, 362].