

## Dose Equivalent Unit

The measuring unit of the ionising radiation dose equivalent is the **sievert (Sv)**. 1 Sv = the equivalent dose of radiation absorbed by body tissue corresponding to one joule of energy deposited in one kilogramme of this tissue by gamma radiation.

Small fractions of a sievert can be easily measured with a dosimeter. Most often units are one thousandth of a Sv (a millisievert or mSv) and a millionth of a Sv (microsievert or  $\mu\text{Sv}$ ).

### **For comparison:**

*The lifetime dose an average European gets from natural background radiation is 100 to 400 mSv. This corresponds to an average equivalent dose rate of 0.13 to 0.53  $\mu\text{Sv}$  per hour.*

*A slowly accumulated lifetime dose of 10,000 mSv would increase cancer risk by 0.22 percent. However, the same dose administered within a short time (from a fraction of a second to hours) would result in serious radiation disease and probably end in death.*

### **The International Commission on Radiation Protection (ICRP) recommends limits for the accumulated dose from technical sources:**

- *The annual dose limit for controlled nuclear workers or medical personnel is 20 mSv.*
- *A worker's dose may reach 50 mSv in an exceptional year when the five-year average is not higher than 20 mSv per year.*
- *In a declared nuclear emergency, the recommended limit is 100 mSv for a worker.*
- *The ICRP could sanction a maximum accumulated dose of 250 mSv in extraordinary situations.*
- *For the general public, the ICRP recommends an annual limit of 1 mSv.*

*In most countries, the natural background radiation level is between 1.5 and 5 mSv a year.*