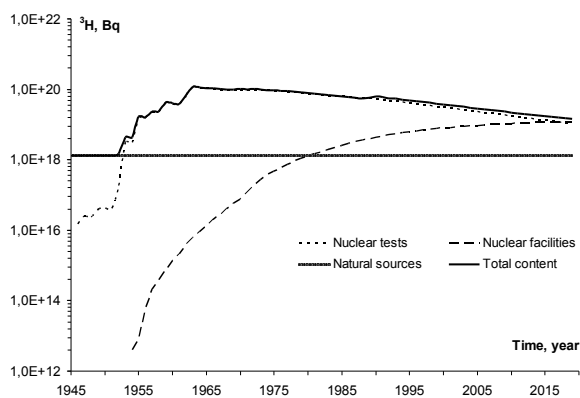


# Artificial disbalance of tritium in the biosphere

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The modern Tritium content in the Biosphere, formed due to nuclear tests and exploration of nuclear facilities, exceeds by 20 times the natural Tritium content. During the next 10 years the contribution of “bomb” (due to radioactive decay) and “nuclear power” (due to development of nuclear energy) sources of Tritium will come to equilibrium. The main modern source of Tritium is nuclear power engineering which generates annually  $7.6 \times 10^{17}$  Bq of Tritium, which exceeds by 10 times its formation from natural sources (Fig. 1).



**Figure 1:** Tritium sources in the Biosphere.

Researches on variations of the Tritium/Protium isotopic ratio in living and nonliving organic material in the ecosystem allow us to set the hypothesis on formation of Hydrogen isotopic composition in the biosphere exclusively in photosynthesis. The value of isotopic ratio  $^3\text{H}/^1\text{H}$  is not changed during the mineralization of organic residue.

Contrary to the mechanism formed during the biological evolution of living matter, organic substance and internal water of plants of semi-natural water-marsh ecosystem is enriched with heavy isotope – Tritium. The fractionating factor is reached to 18 in comparison with the isotopic composition of habitat.

The content of organically bounded Tritium in tissues of water plants is directly proportional to the Tritium contamination of habitat. There is considerable danger in the substantiation of Protium atoms by Tritium in 8 essential and 2 conditionally essential amino acids, which are synthesized by plants alone and transferred to animal and human organism trough trophic circuits only.