Polonium (Po)

**Element classification:** Chalcogen  
**No. of isotopes:** 40 (all radioactive)  
**Typical elemental concentrations:**  
- Soil (avg. dry): 37 Bq/g  
- Vegetables: 15—333 mBq/kg

**Key sources**
- **Artificial production:** Production in reactors by activation of Bi (absorption of neutrons by the Bi nucleus)  
- **Natural sources:** Daughter of $^{222}\text{Rn}$ accumulates mainly in plants and seafood. Surface soils can present higher activities due to radon disintegration in to the atmosphere

**Why is it of interest?**
- It’s a natural radionuclide, present in several NORM industries  
- Present high concentrations in tobacco, moss and seafood (e.g. shrimps, mussels...)  
- Used as a poison (e.g. Alexander Litvinenko)  
- Daughter of radon

**Behaviour in the Environment**
- Similar bio-geochemically to Selenium  
- Low boiling point (962 °C @ 1 atm)  
- Accumulates in plant leaves (e.g. tobacco)  
- High concentrations in filtering seafood  
- Distributes mainly throughout muscle and soft tissues  
- Binds to smaller particles

**For more information ...**
- IRSN $^{210}\text{Po}$ factsheet  
- Nuclear safety Po factsheet

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Radioisotopes of significance to environmental radioactivity

Polonium

radioecology

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