

Radioisotope Fact Sheets Guideline

Section 1 - Purpose and Scope

(1) This Guideline contains a list of links to the fact sheets of unsealed radioisotopes commonly used in appropriately certified radiation laboratories within The University of Queensland (UQ).

(2) This Guideline should be read in conjunction with UQ's [Radiation Safety - Regulatory Compliance and Risk Management Procedure](#) and other UQ procedures and guidelines pertaining to radiation safety.

Section 2 - Process and Key Controls

(3) The radioisotope fact sheets provided within this Guideline have been produced with the relevant information from the [Radiation Safety Regulation 2021](#) (Regulation) and other relevant sources. These isotopes are often used as tracers and used in very dilute solutions and most will have short half-lives.

(4) Work with these radioisotopes must be performed in laboratories certified for use with unsealed sources. Users must meet regulatory requirements (e.g. Use Licences, Approval to Acquire, etc.) as detailed in the [Radiation Safety - Regulatory Compliance and Risk Management Procedure](#).

Section 3 - Fact Sheets for Commonly Used Radioisotopes

(5) Click on the radioisotope name to obtain its Safety Data Sheet in PDF format.

| Name | Radioisotope | Radiation type |
|-----------------------------|----------------------------|-----------------------------------|
| Carbon 14 | C-14 / ¹⁴ C | beta |
| Calcium 45 | Ca-45 / ⁴⁵ Ca | beta |
| Cadmium 109 | Cd-109 / ¹⁰⁹ Cd | X-ray |
| Chlorine 36 | Cl-36 / ³⁶ Cl | beta |
| Cobalt 57 | Co-57 / ⁵⁷ Co | low energy X-rays and gamma |
| Chromium 51 | Cr-51 / ⁵¹ Cr | low energy X-rays and gamma |
| Copper 64 | Cu-64 / ⁶⁴ Cu | beta and gamma |
| Copper 67 | Cu-67 / ⁶⁷ Cu | beta and gamma |
| Fluorine 18 | F-18 / ¹⁸ F | beta and gamma |
| Iron 55 | Fe-55 / ⁵⁵ Fe | weak X-rays (and auger electrons) |
| Iron 59 | Fe-59 / ⁵⁹ Fe | beta and strong gamma |
| Tritium | H-3 / ³ H | weak beta |

| Name | Radioisotope | Radiation type |
|---------------------------------|----------------------------|------------------------------|
| Iodine 125 | I-125 / ¹²⁵ I | weak X-rays |
| Magnesium 54 | Mn-54 / ⁵⁴ Mn | weak X-rays and strong gamma |
| Phosphorous 32 | P-32 / ³² P | beta |
| Phosphorous 33 | P-33 / ³³ P | beta |
| Rubidium 86 | Rb-86 / ⁸⁶ Rb | beta |
| Sodium 22 | Na-22 / ²² Na | beta |
| Sulphur 35 | S-35 / ³⁵ S | beta |
| Technetium 99m | Tc-99m / ^{99m} Tc | weak gamma |
| Uranium 238 | U-238 | Alpha, beta, gamma |
| Uranium natural | U-234, 235, 238, Th-234 | Alpha, beta, gamma |
| Zinc 65 | Zn-65 / ⁶⁵ Zn | strong gamma |

Section 4 - Naturally Occurring Radioactive Material (NORM)

(6) NORM is the term used to describe materials containing radioisotopes that exist in the natural environment, e.g. uranium ores and thorium in the form of mineral sands.

(7) They include the following radioisotopes:

- a. long-lived radionuclides such as uranium-238 (U-238), uranium-235 (U-235) and thorium-232 (Th-232), and their radioactive decay products (such as radium, radon, polonium, bismuth and lead);
- b. individual long-lived radionuclides such as potassium-40 (K-40), rubidium-87 (Rb-87) and indium-115 (In-115).

Section 5 - Monitoring, Review and Assurance

(8) This Guideline will be reviewed and updated by the Radiation Protection Consultant on a regular basis, especially when there are changes in the legislation which may affect the accuracy of the radionuclide.

Section 6 - Appendix

Definitions

| Term | Definition |
|------------|---|
| UQ workers | <p>For the purposes of this Guideline includes:</p> <ul style="list-style-type: none"> • staff - continuing, fixed-term, research (contingent funded) and casual staff; • contractors, subcontractors and consultants working under UQ systems and control (e.g. contingent workers); • visiting academics and researchers; • academic title holders, visiting academics, emeritus professors, adjunct and honorary title-holders, industry fellows and conjoint appointments; • higher degree by research students; and • volunteers and students undertaking work experience. |

Status and Details

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