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 with 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

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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	For the purposes of this Guideline includes: • 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.

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Status and Details

Status	Current
Effective Date	4th January 2023
Review Date	4th January 2028
Approval Authority	Director, Health Safety and Wellness
Approval Date	4th January 2023
Expiry Date	Not Applicable
Policy Owner	Lucy Beikoff Director, Health, Safety and Wellness
Enquiries Contact	Health, Safety and Wellness Division

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