ISO 16638-1:2015-12 (E)

Radiological protection - Monitoring and internal dosimetry for specific materials - Part 1: Inhalation of uranium compounds

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 2

3 Terms and definitions 2

4 Symbols and abbreviated terms 6
4.1 Symbols 6
4.2 Abbreviated terms 7

5 Purpose and need for monitoring programmes 7

6 General aspects 10
6.1 Radiological aspects 10
6.2 Chemical toxicity 11

7 Reference levels for uranium 12
7.1 Radiological aspects 12
7.2 Chemical toxicity 15
7.2.1 General 15
7.2.2 Exposure limits 15
7.3 Application of reference levels 16

8 Routine monitoring programmes 16
8.1 General 16
8.2 Workplace monitoring 16
8.3 Individual monitoring 17
8.3.1 General 17
8.3.2 Dosimetric and radiation 17
8.3.3 Chemical hazard 18
8.4 Methods and monitoring intervals 18
8.4.1 General 18
8.4.2 Time intervals for toxicological risk 18
8.4.3 Time intervals for radiotoxicological risk 18
8.4.4 Principles and assumptions 19

9 Special monitoring programmes 20
9.1 Workplace monitoring 20
9.2 Individual monitoring 20
9.2.1 Recommended monitoring for toxicological risk 20
9.2.2 Recommended monitoring and period for radiotoxicological risk 20

10 Task-related monitoring programmes 21
10.1 Workplace monitoring 21
10.2 Individual monitoring 21

11 Performance criteria for laboratories 22

11.1 General 22
11.2 Critical values 22
11.3 Reference values 23
11.4 Performance criteria for workplace monitoring 23

12 Quality assurance and quality control for bioassay laboratories 24

13 Procedure for the assessment of exposures 24
13.1 General 24
13.2 Assessment of workplace monitoring data 25
13.3 Assessment of individual monitoring data 25
13.4 Properties of a software tool 25
13.5 Uncertainties 26
13.6 Quality assurance of the assessment process 27

14 Reporting and documentation 27
14.1 Reporting results for in vitro measurements 27
14.2 Reporting results for in vivo measurements 28
14.3 Documentation of the dose assessment 28

Annex A (informative) Nuclear data of U-238 and U-235 decay 30

Annex B (informative) Default classification of uranium compounds 31

Annex C (informative) Measurement techniques for uranium 32

Annex D (informative) Committed effective dose per unit intake for uranium compounds 36

Annex E (informative) Estimation of uncertainties for internal dose assessments 37

Bibliography 41