

ISO 16659-2:2026-06 (E)

Ventilation systems for nuclear facilities - In-situ efficiency test methods for iodine traps with solid sorbent - Part 2: Radioactive CH₃I method

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Method	2
4.1 General	2
4.2 Principle of the method	2
4.3 Parameters affecting iodine removal	3
4.3.1 General	3
4.3.2 Effect related to the sorbent	3
4.3.3 Effects related to the operating conditions	4
4.4 Other specificities of the method	6
4.4.1 Use of the CH ₃ ¹³¹ I tracer	6
4.4.2 Toxicity	7
4.4.3 Sampling	7
5 Test equipment	8
5.1 Generation and injection devices	8
5.2 Sampling device	8
5.2.1 General	8
5.2.2 Sampling nozzle	10
5.2.3 HEPA filter	10
5.2.4 Activated charcoal cartridges	10
5.2.5 Air flow rate measurement	11
5.2.6 Release in the ventilation duct	11
5.3 Measurement device	12
5.3.1 Radioactivity (γ-spectrometer)	12
5.3.2 Relative humidity (hygrometer) and temperature (thermometer)	12
5.3.3 Ventilation, injection and sampling flow rate	12
6 Safety of workers, members of the public and the environment	12
6.1 Main workers safety provisions	12
6.1.1 Radioactive considerations	12
6.1.2 Biological considerations	13
6.2 Main provisions for ensuring safety of the population and the environment	13
6.3 Management of radioactive sources and radioactive waste	13
7 Facility arrangements	13
8 Procedure to perform the test	14
8.1 Test preparation	14
8.1.1 Calibrations/periodic verifications	14
8.1.2 Na ¹³¹ I source preparation and calculation of the minimal activity	14
8.1.3 Facility arrangements	16
8.1.4 Sampling lines	16
8.1.5 Connections	16
8.2 Test execution	16
8.3 Test end	16
8.3.1 Disassembly	16

8.3.2	Radiation controls.....	17
8.3.3	Samples counting.....	17
9	Establishing the result.....	18
9.1	Presenting the result.....	18
9.2	Accuracy of the result.....	19
9.2.1	General formula of uncertainties.....	19
9.2.2	Parameters relative to the ventilation system and test conditions.....	19
9.2.3	Parameters relative to the equipment.....	20
9.2.4	Parameters relative to the method.....	21
9.3	Evaluation and test report.....	22
Annex A	(normative) Test method “In-situ generation method”	24
Annex B	(normative) Test method “Laboratory generation method”	28
Annex C	(informative) Examples of correlations	33
Annex D	(informative) Examples of activity of iodine-131 injected to test an iodine trap	35
Annex E	(informative) Example of typical test report for CH₃¹³¹I method.....	36
Bibliography		38