

ICS 13.280

CCS F70



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 11930-2010

Radiation protection regulations for handling unsealed source

操作非密封源的辐射防护规定

Issued on: November 10, 2010

Implemented on: September 1, 2011

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

1	Scope
2	Normative references
3	Terms and Definitions
4	General Principles
4.1	Dose limit
4.2	ALARA
4.3	Defense in Depth
5.1	General Requirements
5.2	Operating Conditions
5.3	Personal Protection
6	Radiation Protection Monitoring
6.1	General Requirements
6.2	Personal Monitoring
6.3	Workplace monitoring
6.4	Effluent monitoring
6.5	Environmental Monitoring
7	Radioactive Waste Management
7.1	General requirements
7.2	Radioactive liquid waste
7.3	Solid radioactive waste
7.4	Radioactive emissions

Foreword

4.1.1,5.1.1,7.1.1,9 this standard is mandatory, the rest are recommended. This standard replaces GB 11930-1989 "Regulations for radiation protection operation of open radioactive material." This standard compared with GB 11930-1989, the major changes are as follows:

--- Added "Terms and Definitions";

--- Original standard overall framework and specific technical contents have been revised;

--- Original 3.1 "general principle" to increase the dose limiting, optimization of radiation protection, defense in depth and related requirements;

--- Increased radiation in the workplace grading requirements, accident prevention and

emergency response reg;

--- Remove the original standard "Safety Management" reg;

--- Remove the original Appendix B radiation protection standards body or person primary responsibility (reference);

--- Original standard table contents and format of the cycle has been revised A.1 workplace routine monitoring. Appendix A of this standard is the data appendix. The standard proposed by China National Nuclear Corporation. This standard by the National Standardization Technical Committee on Nuclear Energy (SAC/TC58) centralized. This standard was drafted. China Institute of Atomic Energy, Institute of Nuclear Industry Standardization. The main drafters of this standard. Xuchang, Zhang Xin. This standard replaces the standards previously issued as follows:

--- GB 11930-1989. Operating unsealed sources of radiation protection

1 Scope

China's mandatory radiation protection regulations for handling unsealed sources. The distinction from a sealed source is the whole point: a sealed source is radioactive material encapsulated so that it can irradiate but not escape, and the protection against it is distance, time and shielding. An unsealed source is loose - a solution, a powder, a gas - and it can be spilled, spread on a glove, inhaled or ingested, which makes contamination and internal dose the governing hazards rather than external exposure. That changes everything about the facility: the classification of laboratories by the activity handled, the surfaces that can be decontaminated, the fume hoods and glove boxes, the airflow that runs from clean areas towards dirty ones, the monitoring of hands and feet at the exit, and the management of radioactive waste. These are the rules for nuclear medicine departments, radiopharmacies and radiochemistry laboratories.

This standard specifies the operation unsealed sources of radiation protection principles and requirements. This standard applies to the production of radioisotopes and applications operating unsealed sources of laboratory activities; unsealed sources other operating activities Reference may be used.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB 5294 occupational exposure individual monitoring for external exposure monitoring

GB 8999 ionizing radiation monitoring quality assurance GENERAL PROVISIONS

GB 11217 General provisions for monitoring effluents at nuclear facilities

GB 11806 Regulations for the Safe Transport of Radioactive Substances

GB 14500 radioactive waste management

GB 18871-2002 ionizing radiation protection and safety of radiation sources basic standards
HJ/T 61-2001 environmental radiation monitoring technical specifications

3 Terms and Definitions

The following terms and definitions apply to this standard.

3.1 Unsealed sources **unsealedsource** Source does not meet the definition of sealed sources in the conditions listed. The definition of a sealed source is. sealed in a capsule or in tightly bonded to the cover layer in And showed solid form radioactive material. Cladding or covering layer sealed source should have sufficient strength so that a source in the conditions of use and design of the mill Damage under the conditions and in anticipated event conditions, can maintain the sealing performance, there will be no radioactive material leaked out.

3.2 Inclusive containment Method of preventing or physical structure or boundaries shift to the outside through the diffusion of the radioactive material is determined, even in the general case of an accident, this Class method or physical structure can prevent leakage of radioactive material reaches an unacceptable level.

3.3 Airtight barrier confinement barrier By the road or a system of physical barriers together with the corresponding auxiliary equipment (including ventilation equipment) constituted, the system can effectively limit Or prevent the release of radioactive material to the outside world under normal and abnormal conditions.

3.4 Control area controledarea In one area of radiation in the workplace division within this area require or may require to take special protective measures and safety measures, so that.

a) under normal operating conditions to control or prevent the spread of contamination normal irradiation;

b) to prevent or limit the extent of potential exposure.

3.5 Supervised area supervisedarea Not determined to be the control area, usually you do not need to take special protective measures and security measures, but we must continue to check the condition of any occupational exposure HE area.

3.6 Simulation test mock-up experiment Before a test experiment to verify certain parameters, technical training operations carried out such purposes. It can also refer to radiation after the accident In order to determine the conditions of similar experiments by

accident Dose personnel carried out.

3.7 Cold test coldtesting Non-radioactive substance (tracer can sometimes amount of radioactive material) instead of high-level radioactive material to certain methods, procedures, equipment or device Preparation of the tests carried out.

3.8 Thermal Test hottestesting Under normal operating conditions, the expected level of radioactivity of certain methods, procedures, instruments and equipment tests carried out.

3.9 Tasks (Operation) Monitoring task (operational) monitoring Aims to provide operational management for specific tasks (operations) immediate decision or optimization of radiation protection and the relevant information needed to carry out An unconventional monitoring.

3.10 Special monitoring specialmonitoring In an investigative suspicion or lack of enough information to tell whether the security situation in the workplace under control, had carried out Measure, designed to provide detailed information to clarify certain issues and identify the next steps to be taken way.

4.1 Dose limit

4.1.1 normal irradiation of radiation workers engaged in non-sealed sources should be subject to operating restrictions, the operation to deal with the real unsealed sources Public exposure practice activities arising from restrictions, determine dose limits, control the level of surface contamination and dose constraint value shall follow GB 18871-2002 requirements.

4.1.2 should develop management limits, and other reference levels based on national standards, optimization of protection and safety principles. These values may include.

- a) a practice of individual dose control target value;
- b) radionuclides maximum operating capacity and storage capacity;
- c) the radiation levels in the workplace each operating area or surface contamination level;
- d) Radiation levels under normal circumstances, neighborhood, workplace air concentrations of radionuclides;
- e) work under normal conditions inside the aerosol concentration and radiation levels;
- f) of the effluent radioactivity concentration and the total activity;
- g) determining the safety and protective equipment should be replaced or repaired relevant parameters.

4.2 ALARA

4.2.1 Operation after unsealed sources should enable optimization of protection and safety, so that the practice of taking into account the economic and social factors, individual