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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 29469-2024

Replacing GB/T 29469-2012

Cleanrooms and associated controlled environments - Evaluation of performance and rationality

洁净室及相关受控环境 性能及合理性评价

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1.Structure and drafting rules for standardization documents" Drafting is required. This document replaces GB/T 29469-2012 "Performance and rationality evaluation of clean rooms and related controlled environments" and is consistent with GB/T Compared with 29469-2012, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

a) The scope of application has been changed (see Chapter 1, Chapter 1 of the.2012 edition);

b) The definition of the term "monitoring" has been changed (see 3.5,

3.9 of the.2012 edition);

c) Deleted the terms performance and reasonableness evaluation (see 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.10, 3.11, 3.13,

d) Added terms such as controlled environment, clean room and related controlled environment, verification, enclosure, etc. (see 3.1, 3.2,

e) Change "evaluation and project progress linkage and procedures" to "general requirements" (see Chapter 4, Chapter 4 of the.2012 edition);

f) The "Evaluation Content" has been changed (see Chapter 5, Chapter 5 of the.2012 edition);

g) Added "Evaluation Conclusion and Grade" (see Chapter 6);

h) Added "Evaluation Report" (see Chapter 7);

i) The "Evaluation Form" has been deleted (see Appendix A of the.2012 edition). Please note that some of the contents of this document may involve patents. The issuing

organization of this document does not assume the responsibility for identifying patents. This document was proposed and coordinated by the National Technical Committee for Standardization of Clean Rooms and Related Controlled Environments (SAC/TC 319). This document was drafted by: China Power Investment Engineering Research, Testing and Assessment Center Co., Ltd., China Electronics Engineering Design Institute Co., Ltd., China National Standardization Association, Jiangsu Sujing Engineering Construction Co., Ltd., Suzhou Antai Air Technology Co., Ltd., China Academy of Engineering Physics Laser Polymerization Co., Ltd. Transformation Research Center, China Electronics System Engineering Second Construction Co., Ltd., Harbin Institute of Technology, China Academy of Building Research Co., Ltd., Suzhou Hongji Clean Technology Co., Ltd., Beijing Satellite Environmental Engineering Research Institute, China Electronics Jingtai Electronic Engineering Co., Ltd., China People's Liberation Army PLA Air Force Special Medical Center, Jianke Environmental Energy Technology Co., Ltd., Zhejiang Huayuan Environmental Engineering Co., Ltd., Suzhou Indel Indoor Air Technology Co., Ltd. Technology Co., Ltd., Foshan Mingxuan Medical Construction Intelligent Manufacturing Technology Co., Ltd., Yantai Baoyuan Purification Co., Ltd., China Academy of Space Technology, Shenzhen Qianhai Lifeng Clean System Co., Ltd., Shandong Taihong Biotechnology Development Co., Ltd., Yuanpin Cell Biotechnology Group Co., Ltd., Nanjing University of Science and Technology, Nanjing Jiunuo Technology Co., Ltd., Kingsway Fluid Control (China) Co., Ltd., Zhuhai Gree Electric Appliances Co., Ltd., Zhong Kaifa Agricultural and Engineering College, Honghui System Integration (Jiangsu) Co., Ltd., Sinopec Shanghai Engineering Co., Ltd., Nanjing Construction Engineering Quality and Safety Full Supervision Station, Suzhou Jianke Clean Technology Co., Ltd., Kunshan Construction Engineering Quality Inspection Center, Liuhefeng (Tianjin) Technology Co., Ltd. Company, Canglong Group Co., Ltd., Shandong Grid Artificial Environment Industry Design Institute Co., Ltd. The main drafters of this document are. Wang Li, Tan Jun, Yang Ziqiang, Hou Yi, Liang Lei, Wang Jian, Liu Xinzhuang, Hao Yinbo, Ji Qizheng, Guo Kai, Cao Jingui, Yuan Xiaodong, Ding Lixing, Yang Denglu, Feng Xin, Lu Weidong, Yang Xiaolin, Chen Siyuan, Zeng Shiqing, Zhou Bin, Zhu Wenhua, Li Shuai, Tang Yifeng, Yang Yuntao, Yang Zhenhua, Tong Guangcai, Li Li, Li Hongbo, Sun Lin, Chen Mingjun, Li Yuhua, Wang Zhijun, Gu Dongming, Fang Yan, Gao Jian, Li Quanhui, Zhao Jianhua, Wang Bingjing, Zhou Yicheng, and Wang Huan. The previous versions of this document and the documents it replaces are as follows: --First published in.2012 as GB/T 29469-2012; --This is the first revision.

Cleanrooms and related controlled environments are used to control indoor pollution to an appropriate level to complete pollution-sensitive activities, such as electronics, aviation, The environmental conditions necessary for production and scientific research in industries such as aerospace, food, medicine, and medical care are difficult to build, require complex technology, consume high energy, and require high investment. This revision proposes the basic requirements that clean rooms and related controlled environments should meet, the

main contents of performance and rationality evaluation, and the evaluation Conclusions and grade requirements to ensure that clean rooms and related controlled environments are designed reasonably, operate reliably, and have advanced technology on the basis of safety and compliance. It can meet the technological and usage requirements of production and scientific research, while being economical, applicable, green and energy-saving. Cleanrooms and related controlled environments Performance and rationality evaluation

1 Scope

China's national standard for evaluating the performance and the rationality of cleanrooms and associated controlled environments. It specifies the general requirements, the content of the evaluation, the evaluation conclusion and grading, and the evaluation report. Cleanroom standards mostly answer one question: how clean is it. The classification standards count particles and assign a class, and a room either meets its class or does not. This document asks a second question that the classification standards do not: is the installation reasonable. A cleanroom that meets its particle class while consuming three times the energy it needs, or while being impossible to clean, or while depending on an air change rate chosen by copying another project, has passed its classification and failed as an engineering solution. Cleanrooms are among the most energy-intensive buildings there are - the air handling runs continuously and moves enormous volumes through high efficiency filters - and the specified cleanliness class, once chosen, drives that cost for the life of the facility. So the evaluation covers the performance against the requirements and the rationality of how it is achieved: whether the class specified is the class the process needs, whether the airflow arrangement suits the activity, whether the pressure regime does what it is supposed to, whether the monitoring measures the right things in the right places, and whether the energy consumed is proportionate. The 2024 revision restructures the document around that purpose. It replaces the linkage between evaluation and project progress with general requirements, revises the evaluation content, and adds two chapters that the 2012 edition did not have: an evaluation conclusion with grades, and an evaluation report. Issued and in force since 23 August 2024, it replaces GB/T 29469-2012.

This document specifies the general requirements for the performance and rationality evaluation of cleanrooms and related controlled environments, as well as the evaluation content, evaluation conclusions and Grade and evaluation report. This document is applicable to the performance and rationality evaluation of production and scientific research clean rooms and related controlled environments in various industries.

2 Normative references

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 controlled environment A specific area where pollution sources are controlled by prescribed methods. [Source: GB/T 25915.6-2010, 2.45]

3.2 Cleanroom and associated controlled environment A room (clean room) or confined space (clean area) that is controlled and classified according to the concentration of airborne particles, microbial limits, and chemical concentrations. And its related limited areas where pollution sources are controlled in accordance with prescribed methods (related controlled environments).

3.3 Verification Review and inspect the technical indicators, technical measures, management measures, and operating results of clean rooms and related controlled environments.

3.4 Envelope structure A general term for interior parts supported by a frame.

Note. Including ceiling, walls (display screens integrated with walls, lockers and other related devices), floors, doors and windows, various interfaces and seals, etc. [Source: GB/T 36372-2018, 3.3, modified]

3.5 monitoring Measurements performed according to specified methods and plans to demonstrate facility performance. Note

1.Monitoring can be classified as continuous, intermittent or periodic. If it is periodic, the frequency must be specified. Note

2.Monitoring information is used to observe dynamic trends and provide process support. [Source: GB/T 25915.2-2021, 3.2, modified]

3.6 Risk The likelihood of the hazard occurring and its severity. [Source: GB/T 25915.6-2010, 2.114]