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Guidelines for quality safety improvement of intelligent consumer product

智能消费品质量安全改进指南

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Guidelines for quality safety improvement of intelligent consumer product

1 Scope

This document specifies the contents on the basic principle, improvement process, quality safety information collection, quality safety risk identification, quality safety analysis and quality safety improvement of intelligent consumer products.

This document applies as guidelines for various organizations to carry out activities related to quality safety improvement of intelligent consumer products.

2 Normative references

The following documents are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 28216, Assessment and control on consumer products quality safety factors - General principles

GB/T 28803, Directives for risk management of consumer products safety

3 Terms and definitions

The following terms and definitions are applicable to this document.

3.1 Consumer product

Mainly but not limited to products designed and produced for personal use, including product components, parts, accessories, instructions for use and packaging.

[Source: GB/T 35248-2017, 2.2]

3.2 Intelligence

The ability to possess human or human-like intelligence characteristics.

Note: Human or human-like intelligence characteristics are manifested in the fact that in the process of achieving a certain purpose, they will always experience one or more processes or process cycles of perception, decision-making, and

execution, and improve their ability to achieve goals and the efficiency and effectiveness to achieve goals. It is believed in this document that, in embodying the human or human-like intelligence characteristics, the abilities and processes of perception, decision-making, execution and learning therein are indispensable.

[Source: GB/T 28219-2018, 3.1]

3.3 Quality safety improvement

In view of the quality safety risks of products, improve the process of product design, production, storage, transportation, sales, and use to reduce product quality safety risks.

4 Basic principles

Guarantee consumers' informed consent before collecting, analyzing, and using data in the process of user use, and do not violate personal privacy.

The quality and safety improvement of intelligent consumer products is a long-term process. By continuously focusing on the quality safety of intelligent consumer products, continuously analyzing relevant data, discovering quality safety risks, and improving the design, production, storage, transportation, sales, and use of intelligent consumer products, continuously improve the quality safety.

Conduct a comprehensive analysis of the entire system, starting from the entire life cycle of intelligent consumer products, discover quality safety risks, formulate improvement plans, and comprehensively improve the quality safety of intelligent consumer products.

5 Improvement process

The quality safety improvement of intelligent consumer products is based on effective information. Effectively utilize the convenience of information collection in the process of design, production, storage, transportation, sales, and use of intelligent consumer products, use information technology to connect the internal and external processes of the enterprise to realize the data collection and processing of the entire life cycle of intelligent consumer products, accurately identify the quality safety risks of intelligent consumer products, and analyze the causes of the risks, so as to formulate effective measures to improve the quality safety of intelligent consumer products. The quality safety risk management of intelligent consumer products should comply with the provisions in GB/T 28803.

The quality safety improvement of intelligent consumer products shall be carried out in four cycles, namely, quality safety information collection, quality safety risk

-- place of use;

-- ambient temperature of the environment;

-- air humidity of the environment;

-- indoor or outdoor;

-- other use environment data.

Own state data may include:

-- various indicators of the intelligent consumer product in the event of quality safety accidents;

-- use;

-- use duration and frequency;

-- other own state data.

Other data may include:

-- supervision and spot check data;

-- online public opinion monitoring data;

-- complaint reporting data;

-- recall notification data, etc.

7 Quality safety risk identification

According to the data collected in the whole life cycle of intelligent consumer products, clarify the existence of quality safety risks of intelligent consumer products; judge and sort out the faced and potential risks; identify the nature of the risks. On the basis of following the principles of information integrity and intelligence, comprehensively identify the quality safety risks of components such as device firmware, control systems, and back-end information systems related to intelligent consumer products. The identification of quality safety risk factors for intelligent consumer products shall comply with the provisions in GB/T 28216.

The main tasks of the quality safety risk identification stage include:

-- Identify existing and potential intelligent consumer product quality safety risks;

-- Identify the consequences of quality safety risks of intelligent consumer products;

-- Identify the quality safety risks of intelligent consumer products that shall be improved and are acceptable.

Approaches to quality safety risk identification generally include but are not limited to the following aspects:

-- data generated by the intelligent consumer product itself and the remote system;

-- quality safety data reporting for the intelligent consumer product;

-- consumer complaints;

-- media coverage of intelligent consumer product injury incidents;

-- relevant database information, such as recalls, notifications, etc.;

-- relevant laws, regulations and standards;

-- safety performance testing of intelligent consumer products;

-- research reports of industry experts and researchers;

-- other ways.

The types of quality safety risks of intelligent consumer products vary with different intelligent consumer products, generally including but not limited to the following aspects:

-- safety risk of device firmware, that is, the safety risk of intelligent consumer products in terms of hardware devices;

-- functional risks, including: risks in the completeness and reliability of the functions of intelligent consumer products, functional risks caused by defects in the software system built into the product itself, risks caused by defects in cloud software for products with remote interaction and control functions, etc.

-- information safety risk, that is, the risk of intelligent consumer products in terms of information confidentiality, authenticity, and integrity;

-- electromagnetic compatibility risk, that is, the risk of intelligent consumer products in terms of radiation spurious, electrostatic discharge, and anti-electromagnetic interference;

-- other quality safety risk.

8) product defects in other aspects.

9 Quality safety improvement

9.1 Improvement measures

Improvement measures should be formulated around the entire life cycle of intelligent consumer products based on the results of quality safety analysis. The main improvement measures are as follows.

a) User reasons:

1) Improve unreasonable design;

2) Improve the alarm function for abnormal use;

3) Add physical protection measures;

4) Add technical protection measures;

5) Improve the instructions for use of intelligent consumer products and the corresponding risk warning signs;

6) Conduct safe use training for users, enhance safety awareness, and make them understand potential quality safety risks;

7) Establish a good quality safety injury event information feedback and police notification system;

8) Follow up user feedback and solve problems encountered by users in a timely manner.

b) Environmental reasons:

1) Enhance the environmental adaptability of intelligent consumer products;

2) Strengthen the anti-interference ability and communication reliability;

3) Enhance the perception and alarm functions of harsh environments;

4) Improve the self-protection function, start the protection program beyond the expected use environment;

5) Conduct safe use training for users to prevent use outside the specified use environment.

c) Reasons of own defects:

1) Select safe and reliable raw materials and parts;

2) Add safety protection measures in the design of intelligent consumer products;

3) Enhance the completeness and reliability of the functions of intelligent consumer products;

4) Strengthen the quality control in the process of software system design, coding and testing;

5) Consider the requirements for collecting product data during the stages of production, storage, sale and use during the design of intelligent consumer products;

6) Consider digital production requirements in the design of intelligent consumer products, so as to carry out fine control of the production process;

7) In the whole product life cycle process, especially in the design and manufacturing stages, let all relevant parties (including consumers, suppliers, production departments, etc.) participate in it to reduce the quality safety risks of intelligent consumer products;

8) Establish a data analysis platform to analyze historical data and guide the next production process;

9) Monitor and manage the safety of the whole production process to ensure that the product quality meets the design requirements;

10) Strengthen the quality safety inspection of intelligent consumer products;

11) Introduce intelligent transportation and storage equipment, provide standardized and customized transportation and storage environment, and ensure that the quality of intelligent consumer products is not damaged during transportation and storage;

12) Implement full-process safety monitoring and management of the storage, transportation and sales process of intelligent consumer products;

13) Strengthen the self-sensing function, monitor the working conditions of each module in real time, and ensure the normal operation of the product.

9.2 Continual improvement

After completing a quality safety improvement of intelligent consumer products, continue to collect quality safety information, identify quality safety risks, and analyze quality safety. On the one hand, evaluate the effect of the last improvement, and on the other hand, discover new quality safety risks, to continuously conduct quality safety

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